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### *ELECTRIC RAILWAY TRACTION*

*A Supplement illustrating and describing developments in Electric Railway Traction is presented with each copy of this week's issue.*

**Turning the Corner** Sir Josiah Stamp's New Year staff message was issued in the *L.M.S. Magazine* on Wednesday and was therefore not available for our last week's issue. Our general comments on the tone of the New Year messages of the other railway managers apply equally to that of the Chairman of the London Midland & Scottish Railway, who sees definite indications of improvement in trade and feels that we are justified in looking forward to the present year with hopes of better times to come. "He would be a bold man," says Sir Josiah Stamp, "who would claim that we had reached the end of the trade depression; but there are unmistakable signs that, even if we have not turned the corner, the corner is in sight." We have turned so many corners in these last difficult years that we will restrain our expectations in the meantime. The prospect, we believe, may well be brighter than for some time past, but we should not forget that, according to *The Economist* of October 21 last, discussing the improvement which had taken place up to that date, and assuming a continuation of the recovery at the same rate, it will take another five years to rejoin the "projected" trend of progress of 1924-29. We believe that, barring international complications, which are certainly no more remote than they have been at any time since the war, industrial recovery could be very much more rapid than this, for all the real factors are present. It is only necessary that their implication should be fully understood and financial mechanism adapted to modern conditions.

**Transport in Foggy Weather** Fog descended over large areas of the country recently, disorganising transport arrangements, but much less so on the railways than on the roads and in the air. The interruption of railway traffic becomes steadily less serious with the march of progress in the adoption of such modern aids to railway regularity as colour-light signalling and cab signalling. The Great Western, in fact, is the line least affected by fogs, owing to the universal application of cab signalling upon its main lines, whereby the distant signals are repeated audibly in the locomotive cab, and, should one be passed at "warning," a brake application is automatically made unless the driver has anticipated it. The position is far different on the roads; beyond a certain density of fog road vehicles without rails or signals to guide them must come almost to a standstill, and many must have been the appointments missed in the recent dense fog by those who placed their reliance on transport by road. Aircraft are affected even more seriously by the fog nuisance and for a couple of days the Imperial Airways services between London and Paris had to be entirely suspended.

**The Week's Traffics** The latest traffic returns of the four amalgamated companies cover the week ended January 7 in three cases and therefore are for the first full week of the New Year. The L.N.E.R. return for the week ended January 6 includes one day of 1933, and is the only one to show an increase in passenger train receipts.

| | 1st Week | | | | |
|---|---|---|---|---|---|
| | Pass. &c. | Goods, &c. | Coal, &c. | Total. | Inc. or dec. % |
| | £ | £ | £ | £ | |
| G.W.R. | − 5,000 | + 22,000 | + 3,000 | + 20,000 | + 4·90 |
| L.M.S.R. | − 1,000 | + 38,000 | + 27,000 | + 64,000 | + 7·11 |
| L.N.E.R. | + 3,000 | + 24,000 | + 16,000 | + 43,000 | + 6·57 |
| S.R. | − 5,000 | + 500 | + 500 | − 4,000 | − 1·30 |

For the 27 weeks of its financial year the L.P.T.B. earnings amount to £13,375,800. The Liverpool Overhead has secured an increase of £20 for the week ended January 7, and the Mersey records an improvement of £270 for the week ended January 6. In Ireland the railway traffic week ends on a Friday, and the latest returns are accordingly up to January 5 and include two days of the old year. The Belfast & County Down has an increase for the week of £143, made up of £13 from passengers and £130 from goods. Decreases are, however, recorded both by the Great Northern and Great Southern.

**Australian Commonwealth Railways** The results of working these railways for the year ended June 30, 1933, were definitely better than for any normal year since their establishment, notwithstanding the depleted earnings owing to the period of depression. In 1931-32 drastic economies amounting to £100,819 enabled the loss on working (exclusive of interest charges) to be reduced from £149,487 to £77,695, and in the year under review the loss was brought down to £39,349. There was a satisfactory revival in earnings, which, at £308,452, showed an improvement of £28,345 on the previous year, and in the working expenses of £347,801 there was a saving of £10,001. On the Trans-Australian section of 1,051¾ miles on the 4 ft. 8½ in. gauge, which connects Kalgoorlie in Western Australia with Port Augusta in South Australia, there was a welcome increase of £14,766 in earnings and the loss on working has been further reduced from £23,745 to £9,195. The Central Australian section of 771½ miles on the 3 ft. 6 in. gauge increased its earnings by 17·58 per cent., and reduced its loss on working by 57·97 per cent., and the isolated North Australian section of 316½ miles on the 3 ft. 6 in. gauge brought down its working loss by 21·18 per cent. The

Commissioner (Mr. G. A. Gahan) again strongly urges the construction of the authorised standard-gauge railway from Port Augusta to Red Hill, and the provision of a third rail between Red Hill and Adelaide, which would permit of Trans-Australian trains running through from Kalgoorlie to Adelaide.

**Rohilkund & Kumaon Railway** An advance of Rs.1,13,721 in earnings for the year ended September 30, 1933, furnished by both coaching and goods traffic, was accompanied by a rise of only Rs.19,402 in working expenses, so that the operating ratio was reduced from 48·15 per cent. to 47·61 per cent., and the net earnings increased by Rs.94,319 to Rs.33,82,398. Including £8,642 (against £8,715) share of surplus profits from the Lucknow-Bareilly State Railway, the net profits realised £122,047 compared with £119,768 in the previous year, and the total distribution to stockholders for the year 1932-33 is maintained at 15 per cent. In coaching receipts (Rs.26,02,804) there was an increase of Rs.34,589, the total numbers of passengers having advanced by 138,317 to 6,346,804. From goods traffic the earnings were Rs.35,78,079, an improvement of Rs.27,704, the tonnage of general merchandise lifted being 923,557, against 835,995 in 1931-32. The principal increases occurred under wheat, wood, and sugar cane, though there was a heavy fall in gur, jagree, and molasses. Maintenance of way, works, and stations increased by Rs.43,232, due to heavier repairs to buildings and staff quarters. Renewal of goods vehicles increased carriage and wagon expenses by Rs.23,649. Traffic expenses advanced by Rs.5,538, but locomotive expenses decreased Rs.85,874. The length of line worked was 571 miles, the same as in 1931-32.

**Rail Cruising in Argentina** The habit of cruising by train has spread to Argentina, and details are given in our Overseas columns of the first experiment of this description in South America, under the *ægis* of the Buenos Ayres & Pacific Railway. A feature of the service was the provision of a special Pullman car, complete with orchestra and wireless, for dancing. It is not stated if the light fantastic toe of the tourist was so engaged while the train was in motion; if the custom should spread, it may become necessary for the dance schools to devise special steps for train use, though the beats produced by the passage over rail-joints should materially assist the orchestra in the maintenance of strict rhythms. Another Pullman was equipped for reading and resting, and included a newspaper compartment, with the latest papers and magazines, and a hairdressing saloon. A bath coach was provided in the sleeping car section of the train. El Crucero, as the train was called, travelled first across the Republic to San Rafael, and then to Mendoza, at the foothills of the Andes, where the tourists were received at Government House by the Governor of the province, and taken for a trip up the Transandine Railway. Other places of call were San Luis and San Juan, Villa Dolores, Yacanto, and Mina Clavero. The cruise lasted for nine days, and covered 2,000 miles at an approximate cost of £20 per passenger, and proved very popular; all the accommodation, which was for 70 passengers, was taken up.

**The Broadway Limited** In our December 15 issue an article on the world's fastest long-distance trains scarcely did justice to the difficulty of the route over which one of the four—the Broadway Limited of the Pennsylvania Railroad—is worked. The Pennsylvania Company has now sent us a profile of the route from New York to Chicago which shows that in just over 40 miles westwards from Petersburg the line rises 1,520 ft. to a maximum altitude of 2,194 ft. at Gallitzin, with a corresponding fall of 1,004 ft. in the next 25½ miles, to Johnstown. From Altoona the ascent averages 1 in 64½ continuously for 11·8 miles, with a maximum inclination of 1 in 53, while the descending average for the next 25 miles is 1 in 135, and the ruling grade 1 in 87. Even the high speed stretch of the eastbound Broadway Limited, over the 116½ miles from Liverpool to Wayne Junction—which is booked at a pass-to-pass average of 69·1 m.p.h.—includes an ascent of 349 ft., though the steepest grade against the engine here is 1 in 175, and the ruling figure generally is 1 in 260. One of the hardest bookings is the 52·3 m.p.h. timing of the westbound train over the 130·8 miles from Harrisburg to Altoona, during which the train mounts 862 ft. (554 ft. concentrated in the last 28½ miles), and has practically no downhill running. The punctuality records achieved by the Pennsylvania with this express are all the more noteworthy when the profile of the route is taken into account.

**The Bologna—Florence "Direttissima"** At length the new direct route of the Italian State Railways between Bologna and Florence, which includes in its length the 11½-mile Apennine tunnel, is to be opened in the spring of this year. Not only is the Milan-Rome journey reduced by 21½ miles, but the cutting-out of the steep inclines and sharp curvature of the existing route will render possible accelerations out of all proportion to the reduction in distance. The best time for the new distance of 392 miles between Milan and Rome—almost exactly equal to the 392¾ miles from King's Cross to Edinburgh—is to be brought down from the present 9 hr. 40 min. (for 413½ miles) to 8¼ hr. Among important developments, the Simplon-Orient express is to carry a through sleeping car from Paris to Florence, and vice versa; in the north-bound direction the new connecting train from Rome, which will convey this coach from Florence, will give a Rome-Paris service in 23¼ hr., as compared with the 22½ hr. of the Rome Express (which travels via Genoa, Turin, and the Mont Cenis). A new morning train from Rome at 7.30 a.m. will afford passengers the opportunity of reaching Berne, Lausanne, and Geneva the same evening, without night travelling; and a new service from Milan to Rome at 3 p.m. will give similar facilities in the opposite direction. The improvement of connections at Milan, indeed, together with the institution of several new Milan-Rome services, will effect cuts in long-distance journey times to and from Florence and Rome which in several cases amount to between 3 and 3½ hr. Anticipations as to the value of the Direttissima are thus more than amply fulfilled.

**York and Northallerton Signalling** The description in our issue of April 28 last of the portion of this work that lies between Alne and Thirsk is now supplemented in the present issue by an article describing the remainder of the installation from Poppleton Junction, just north of York, to Alne, and from south of Thirsk to Northallerton. The most interesting portion of this work is at Thirsk, where one signal-box does the work that formerly required five boxes, and it covers an area of over 4¼ route miles. Relay interlocking is used at that place, on which has been superimposed route signalling, and the whole forms a unique system which may lead to developments that will supersede the present power-signalling system. We are much obliged to

the officers of the North Eastern Area for the opportunity to describe this most interesting pioneer installation and congratulate them on the results achieved. Credit is also due to the contractors for their share in providing so efficient an installation. We understand that the work, which is the largest single signalling contract in recent years, was brought into use in stages, with practically no interruptions to traffic, a remarkable achievement for a job of this magnitude. Nor has there been the slightest difficulty as regards the operating staff becoming accustomed to the new methods, a fact which speaks very well for the simplicity of the system.

**British and American Rolling Stock** The visit of the Royal Scot to America tempted the uninitiated to an orgy of doubtful comparisons between British and American railway practice. Conditions in the two countries are so different that no exact comparisons on any score can be drawn. That is not to say that much cannot be learnt from the study of one country's railways by another, and since it is not practicable for every railwayman to visit some other country besides his own, it is an excellent thing to take a working part of the railways of one country and demonstrate it on those of another. The service performed in this way by the Royal Scot's tour in Canada and the United States has been of inestimable value, and it is not unlikely that the impression created by the lightness of the rolling-stock compared with that of typical American rolling-stock may produce tangible results. We give on page 63 a comparative table of weights of the Royal Scot as sent to America and an equivalent U.S.A. train—or a train as nearly equivalent as possible in a country where conditions are very different. American railways are compelled by law to construct all new passenger stock of steel which involves—or hitherto has involved—greater weight than the usual construction in this country consisting of wooden, steel-sheeted bodies on steel underframes. Progress in weight reduction of all-metal rolling stock is being made, and in addition to the use of aluminium and its alloys for parts not highly stressed, the substitution of welding for riveting makes an important contribution. In Germany, for example, the weight of welded main line stock has been reduced from 47 to 36 tons by such means.

**Clear Outlook for Enginemen** We commend to our readers a study of the article on page 52 of this issue describing an ingenious and effective French device for ensuring under all conditions a clear outlook for enginemen. The ordinary cab window of a locomotive is based on the principle that a solid transparent screen is the only means of enabling the driver to see ahead while protecting him from wind. Unfortunately, the glass which stops the wind also collects so much rain or snow, dust, soot, and grease that visibility is seriously impaired, often when clear vision is most required. At least a partial solution to the problem is provided by the use of oscillating wipers where the wind screens of motor cars are concerned, but this device is inadequate to the requirements of locomotive service, partly for mechanical reasons and partly owing to the special difficulties associated with greasy soot, snow, and glazed frost. Where glass windows are used, the driver is compelled to expose himself frequently to wind, rain, snow and cinders, with detriment to his eyes and throat and risk of fatal injury. In 1930, there were 31 deaths on French railways alone due to drivers or firemen being struck by obstacles alongside the track. Even if the driver opens the window or puts his head outside the cab he is apt to be more or less completely blinded by wind, rain, or snow at a time when the range of visibility of signals may be seriously reduced by climatic conditions; and to these objections there is added the confusing reflection of lights in cab windows when running through large stations or thickly populated districts.

**A New Iron-Smelting Process** For five years past experiments have been proceeding continuously at Adderbury, Oxon, with a view to curtailing the lengthy time occupied in the conversion of iron ore to metallic iron by ordinary blast-furnace methods, and it is claimed that this research has now been brought to a successful conclusion. The Duffield process, after pre-heating the ore, employs a reducing furnace in order to drive the moisture out of it, and at the same time, with an admixture of carbonaceous material, rapidly reduces the ore to the metallic state. From here the iron is passed to a melting furnace, and the reduction is complete. The most important claim is that this reduction is effected with roughly one-third of the fuel consumption of ordinary blast-furnace working, and, further, that slack can be used for the purpose. Negotiations are now in progress for the establishment of the Duffield process on a large commercial scale; meantime the construction of a plant on a more limited scale is in hand, and is expected to be completed by the end of March. If anticipations are fulfilled, the ultimate influence of this discovery on iron and steel production generally is likely to be considerable; and the railways will stand to benefit, not only as large consumers of ferrous metals, but also as carriers, especially in the event of an increase of export trade owing to the cheapening of all classes of steel.

**New L.M.S. Mixed Traffic Engines** When a class of locomotive, first introduced only a few years back, is developed on the same railway to reach a total of over 250, it may be taken as certain that the design has proved efficient, and when, after subjecting it to a process of modification and improvement the design is further perpetuated, it goes without saying that the operating department as well as the locomotive department will have found every cause for satisfaction. It was in 1926 that the first L.M.S.R. 2-6-0 tender locomotives were designed and built at the Horwich works under the supervision of Mr. George Hughes, then Chief Mechanical Engineer, and subsequently more were constructed at these works and at Crewe, until by the year 1932 the number in service had reached the large total already mentioned. In 1932 five of the engines were taken into the shops and fitted with new cylinders and poppet valve gear in place of the piston valve cylinders formerly used. Mr. Stanier has now introduced a new series of locomotives having the same wheel arrangement, but differing in certain essential details from the original ones. In accordance with the standard practice inaugurated by him as Chief Mechanical Engineer, a tapered boiler barrel with top feed is now used. By raising the boiler pressure from 180 to 225 lb. per sq. in. and increasing the stroke of the cylinders from 26 in. to 28 in. it has been possible to reduce their diameter from 21 to 18 in. and mount them horizontally and lower down without exceeding the loading gauge. The superheater and the water heating surfaces have been re-arranged and the former reduced. An idea of the compact and generally pleasing appearance of the engines, together with a description of their general characteristics compared with those of the previous series, can be obtained from the article appearing on page 53 of this issue.

## South African Railways and Harbours

THE report on the working of the railways and harbours of the Union of South Africa for the financial year ended March 31, 1933, is the first to be issued over the signature of Mr. T. H. Watermeyer, whose appointment as General Manager was confirmed on August 14, 1933, after he had served in an acting capacity from February 1 of that year. As has been customary, the report deals fully and in an interesting manner with conditions in the Union generally during the period under review, which were exceptionally bad. Towards the end of 1932 the primary activities of the country were practically at a standstill and increasingly heavy losses were being sustained by the farming population as well as by the commercial and industrial sections of the community, with the exception of the gold mines. This reacted very seriously on all branches of the business of the railways and harbours, and the earnings of the main services dropped in 1932-33 below the depleted earnings of the previous year by nearly 7 per cent. Further drastic reductions in working costs had, therefore, to be effected, and the fall of £1,681,284 or 6·80 per cent. in revenue to £23,062,352, was more than met by reductions of £2,065,006 or 12·10 per cent. in expenditure, to £15,003,648. The final result of the year's working of all services after making allowance for all outgoings, including interest, betterment, pensions, &c., was a deficit of £1,193,868, comparing with a deficit of £1,818,621 for the previous year. Some railway revenue and traffic figures are compared in the accompanying table:—

| | 1932–33 | 1931–32 |
|---|---|---|
| Passenger receipts | £4,107,169 | £4,685,617 |
| Passenger journeys | 69,921,653 | 72,961,870 |
| Goods and mineral receipts (other than coal) | £11,887,298 | £12,372,135 |
| Goods and mineral tons | 11,476,544 | 11,439,976 |
| Coal traffic receipts | £2,661,667 | £2,939,609 |
| Coal traffic tons | 6,545,500 | 7,673,419 |
| Ton-miles | 3,759,085,452 | 3,900,312,192 |
| Average haul of paying traffic, miles | 205 | 201 |
| Total receipts | £20,619,878 | £22,039,659 |
| Gross working expenditure (including depreciation) | £15,591,054 | £17,604,116 |
| Surplus | £5,028,824 | £4,435,543 |
| Deficit after payment of interest | £627,120 | £1,212,386 |
| Route-miles open | 13,151 | 13,151 |
| Train-miles | 39,576,745 | 42,302,627 |

With the exception of the Pietermaritzburg suburban area, where an increase of 154,950 passengers was recorded, the decline in travel was general. The advance in goods and mineral tonnage (other than coal) is accounted for by substantial increases in low-rated traffics, such as construction material, agricultural products, and rough timber. Appreciable decreases were, however, recorded in general merchandise and other high-rated traffic which accounted mainly for the shrinkage of £484,837 in revenue. In revenue-earning coal traffic there were decreases of 1,127,919 tons and £297,942. Live stock revenue, on the other hand, advanced by £22,762 to £582,260. At the close of the year under review 57¾ miles of new line were under construction. During the 1933 sessions of Parliament the building of new lines at an estimated cost of £372,668 was sanctioned. These were: Germiston-Elsburg 3¼ miles, Springs-Nigel 21 miles, and Tuinplaats-Marble Hall 37½ miles. Passenger train-mileage during 1932-33 was lower by 5·69 per cent., mixed train mileage by 2·44 per cent. and goods train mileage by 7·64 per cent. These correspond with a drop of 4·17 per cent. in passenger bookings and of 5·31 per cent. in ton-mileage.

Good progress has been made with the doubling of the line between Mount Vernon and Cliffdale, the doubling having been completed as between Mount Vernon and Shallcross. The deviation of the line between Canada Junction and Nancefield is approaching completion. Another portion of the Darnall-Tugela deviation was brought into use in May, 1933. With the completion, anticipated in July, 1934, of the remaining section, the North Coast line improvement scheme, begun in 1917, will come into full operation. A feature of the work now being carried out between Darnall and Tugela is the elimination of main road level crossings. With a view to achieving economies the signalling department was reorganised during the year and the control centralised at headquarters. The past year saw the replacement at Salt River of the hydraulic signalling system by an all-electric signalling installation. A complete three-aspect system of automatic and semi-automatic electric colour-light signalling was brought into operation on the Salt River-Bellville double line section, permitting a 2-minute interval between trains on the Salt River-Maitland section and a 2½-minute interval on the Maitland-Bellville section. The complete installation has resulted in an annual saving in working expenditure of approximately £2,000. The route mileage of road motor services operated at the close of the year totalled 10,036 as against 10,601 at March 31, 1932, the reduction being due to economic conditions and drought. At the end of the financial year the Administration decided that the outlook had sufficiently improved to justify the restoration to the staff of certain of the old service conditions. Provision has been made in the estimates for 1933-34 for electrifying the Daimana-Harrismith line at a cost of £100,000. The mileage is equivalent to 71¼ miles of single track including 12 miles of sidings, and the scheme is expected to be in full operation about the end of 1934. Authority was also given on March 18, 1933, to proceed with electrification of the Cape Western main line from Capetown (Salt River) to Bellville—approximately 9¾ miles of double track—at an estimated cost of £41,410. The scheme provides for operation under electrified conditions of the local passenger service only between Capetown and Bellville.

## The Roumanian Railway Position

A FURTHER report has now been published, the most important parts of which have been reproduced in the *Bulletin of the International Union of Railways*, on the fourth year of working of the plan adopted by the Roumanian Government for putting the railways owned and worked by it in a satisfactory condition, a plan which was drawn up in 1929 at the time when the Roumanian currency was stabilised. It was part of a much larger scheme for the financial and economic development of the country. Money for the reconstruction of the railways has been set aside out of sums raised by two foreign loans, and M. Leverve, Secretary of the International Union of Railways, has been acting as special adviser to the Roumanian Government in connection with the work. In our issue for October 7, 1932, we published an account of the situation then obtaining, and the additional information now available is not encouraging. The continuance of the economic crisis in Roumania has put very great difficulties in the way of carrying out the programme as at first intended. Both imports and exports have dropped considerably in cash value, although the actual tonnage in the case of exports has remained fairly steady. The population has seen itself becoming progressively poorer and has had much less money to spend on travelling in consequence, so that receipts from passenger traffic have again declined, although not quite so heavily as in some countries.

The number of passengers carried by the State Railways fell from 30,944,000 in 1931 to 24,416,000 in 1932. In

1929 the figure was 38,785,000. Fortunately, although the passenger receipts have been so seriously affected, falling from 2,641 millions of lei in 1931 to 2,012 millions last year, goods receipts have amounted to 5,920 millions of lei, which is almost the same figure as that obtained in 1931, the fall being only 0·2 per cent. This result is due to the increase in the traffic in petroleum products, chiefly export, which has compensated for the diminution of that in cereals. The petroleum trade has been growing steadily in Roumania for several years past. The number of passengers carried, as well as of the passenger-kilometres registered, has not diminished in the same proportion as the receipts because of the increase in the average distance travelled per passenger and the decline in receipts per passenger-kilometre occasioned by the transfer of traffic from the higher to the lower classes of carriage, as the population has felt the effects of the crisis. Fares have also been reduced in the hope of meeting to some extent the increasing competition of the motor car. In 1932, as in the preceding year, reductions were made in the freight rates with the object of assisting agriculture, the result, of course, not being favourable to the railway balance sheet, and without a large increase in traffic of all kinds, of which there is little or no sign at the moment, it cannot be. This policy has, however, been continued during the present year also, in some cases the new rates being varied according to the ruling market price of the commodity concerned every four months. It is expected that there will be a drop in receipts of 800 millions of lei as a consequence of these measures.

It is true, on the other hand, that many savings have been realised in the course of the last four years. There has been a large reduction in the staff, the numbers of which have fallen from 114,784 in 1929 to 86,023 at the end of 1932, or a reduction per kilometre of line from 10·34 to 7·68, a figure comparing favourably with most other Continental countries. The Treasury has also allowed a grant of 361 millions towards the railways' pension fund, considerably easing their burdens in this respect. The cost of fuel has been reduced by as much as 50 per cent. in five years, although the traffic in gross tonne-kilometres has fallen by only 11 per cent. in the same time. This has been brought about by a better utilisation of the coal burned, the extension of the use of oil fuel, a reduction in the price of coal and, thanks to the efforts of the mining industry, an improvement in the quality of the supplies. The costs of rolling-stock renewal and maintenance still remain rather high, compared with other countries, and a good deal of money has had to be spent for this purpose in the last year or two, owing to the defective state into which the stock had been allowed to fall. Renewals of the track have been covered by grants from the loans since 1929, ordinary maintenance alone being charged to operating account, but at the end of this year the grants will have been consumed and the whole charge will fall on revenue. In 1931 the deficit on the railways was over 1,300 millions of lei, and although some items are still undetermined, there is no doubt that the working in 1932 has resulted in an equally serious loss. The sums allocated to railway improvement from the loans amounted in all to 6,389,100,000 lei, or about £10,650,000 at par, and they have been expended principally in renewing the track with heavier rails, making good damage caused by the war and by floods, doubling the lines between Adjud and Tecuci and Cernavoda and Constantza. About 260 stations have been fitted with interlocking equipment, that at Bucharest Nord having an all-electric power installation, as mentioned in our issue for June 23. Centralised traffic control does not seem yet to have been tried, though we should say there is good scope for it in Roumania. Certain locomotive depots have been rebuilt, and some new rolling-stock has been obtained. The Sentinel-Cammell railcars put in service on branch lines during 1932 have given satisfactory results both as regards performance and economy, and have brought in a larger revenue even with the reduction of 50 per cent. in passenger tariffs on the lines on which they are used. The construction of new lines has not been proceeded with to the extent originally intended, being limited for the present to the Chisinau-Shaidac line and parts of those between Brasov and Buzau and Bumbesti and Livezeni.

## National Provincial Bank Centenary

THIS year sees the centenary of the National Provincial Bank, the first branch having been opened at Gloucester on January 1, 1834. The deed of settlement of the National Provincial Bank of England was signed on September 23, 1833, and a prospectus drafted proposing an original capital of £1,000,000 to be subscribed in shares of £100 each, and stating that the bank would be formed as soon as half of the original capital was subscribed. To mark the occasion of the centenary the directors have issued an attractive brochure in blue and vellum in which its progress is concisely and interestingly reviewed by Mr. Hartley Withers. The brochure is well illustrated with photographic reproductions of the bank's chief buildings of the past and present and of the portrait of its first General Manager, Daniel Robertson. The signing of the deed of settlement marked the beginning of a new era in English banking. Though not quite the first of the English joint-stock banks, the National Provincial is the first of those banks which, controlled by a board working in London, have furnished credit to industry, over wide-spread areas of the country, stimulating all kinds of manufacturing, agricultural, and commercial enterprise, and promoting international trade by accepting and discounting the sterling bills which have for so long been the currency of world commerce. Joint-stock banking with a system of branches had been for some time in existence in Scotland when Thomas Joplin, the originator of the National Provincial, published a pamphlet in 1822, and set on foot an agitation for reforms by which the Scottish system might be introduced into England. Until 1826 the Bank of England had enjoyed a monopoly of joint-stock banking in England under Acts which restricted the right to issue notes and therefore, as it was then thought, banking business in general, to bodies composed of not more than six partners.

An Act passed in 1826, however, provided that banks with an unlimited number of partners might be formed, outside a radius of 65 miles from London. The National Provincial was formed under the provisions of this Act, and, therefore, its issue of notes was at first confined to its provincial branches. This was the reason why, although it had an office in London, from which control was exercised over the operations of the branches, the National Provincial did not, for many years, open in London for banking business, although Joplin had seen as early as 1823 that deposit banking could be carried on profitably in the Metropolis in spite of the Bank of England's monopoly there of note issue. In 1866, however, the bank opened a banking business at its new building in London, and its first balance sheet was published. In 1918 the company changed its name to the National Provincial and Union Bank on the acquisition of the Union of London and Smith's Bank, and its present name was taken some years later. In 1921 an agreement was completed with Coutts, and the latest of the more prominent acquisitions was that of the old banking business of Grindlay & Co. in 1924.

# LETTERS TO THE EDITOR

*(The Editor is not responsible for the opinions of Correspondents)*

## Southern Railway Electrification

Burgess Hill, Sussex.

January 5

To the Editor of The Railway Gazette

Sir,—Can any of your readers enlighten us as to the reason for electrifying the line between Copyhold junction and Horsted Keynes, a distance of 3 m. 41 ch.? The population of the two hamlets concerned, in 1931, was, Ardingly 1,148 and Horsted Keynes 960. The present train service consists of 14 trains each way on weekdays, of which 11 are "push and pull." It is certain the traffic on the line has never paid during the 50 years it has been open. The electrification will cost, on the lowest computation, £70,000; interest on this sum, together with maintenance and depreciation of electric equipment, will require on a modest computation £10,000 a year—a sum sufficient to pay 4 per cent. on a quarter of a million of the dividendless deferred capital.

Has not the type of rail bus used on the Dyke branch proved an economic success? If it has, why not invest in a second for the Horsted Keynes-Haywards Heath service? The Chairman of the Southern Railway, who resides at Ardingly is, I believe, quite satisfied with this type of rail vehicle.

You mention that with the electrification of the Keymer route to Hastings, most of the trains on the short route via Tonbridge will be withdrawn, but a service for the intermediate stations will still be necessary. Moreover, as the distance via Plumpton and Eastbourne is 32 per cent. (20¼ miles) longer, the annual addition to the train mileage will be very considerable.

Yours faithfully,

G. A. NNOKES

[Probably the electrification of the short length between Copyhold junction (Haywards Heath) and Horsted Keynes (which would be unlikely to cost more than a small fraction of the sum mentioned by Mr. Nnokes) has been decided upon partly with a view to developing the district served for residential purposes, partly to reduce stand-over time for trains which otherwise would have to terminate at Haywards Heath, partly to relieve congestion there, and in addition probably with a view to the eventual extension of electrification to South Croydon from Horsted Keynes via East Grinstead and Oxted. The cost of running a frequent service between Haywards Heath and Horsted Keynes in the circumstances will be extremely low, owing to the improvement it will make possible in the load factor and the better utilisation of the rolling stock.—Ed. *R.G.*]

## The Criticism of a Layman

42, Cambridge Terrace, W.2.

January 8

To the Editor of The Railway Gazette

Sir,—This letter is highly critical, and I am not optimistic as to its meeting with your approval, but it is as accurate and sincere as I know how to make it.

Recently a writer in a serious journal expressed himself thus: "My friend was enjoying the pleasures of anticipation, though why anyone should look forward with happy emotion to journeys by train is a mystery into which I have yet to enter." Since it is a psychological fact that the emotions and feelings play a larger part than reason in governing people's actions, it is obviously a matter for the attention of the railways' highest administrative officers if, as I believe, more than 50 people in every 100 would express themselves in similar terms had they but the chance. In any case, it is of the utmost importance that the railways should know the present attitude and feelings of the public toward the services they want to sell, and what to do in order to make them more attractive. And industrial psychology can provide the answers.

At this point, however, a layman may perhaps be pardoned if he asks on behalf of his millions of fellow travellers this fundamental question: Do the railways really care what the public think, feel, and frequently say about them; or do they much prefer to cling, with the dignity which belongs to old age, to their own ideas as to what kind and standard of travelling facilities shall prevail? Excepting possibly one company, the writer is tempted to think that they do not care, because there is little external evidence of any burning desire to remedy matters; besides which there is the testimony of a considerable number of railway employees with whom he has conversed. On the other hand, if there is an ardent desire on the part of the railways' highest administrative officers to give the public travelling facilities unexcelled by any other country, do they know what is happening on their respective systems, or is there an organised far-reaching conspiracy—having the self-interest motive as a sound reason for its existence—for preventing these officers from knowing what is actually happening "down the line"? Any experienced business psychologist will confirm that there is nothing unusual about that.

It comes to this: either the railway managers do not trouble about, or they do not know of, the discomfort and inconvenience to which the public are subjected; or management has failed, as many able thinkers claim, to keep pace with scientific development; which is it? I wish to put forward the very serious suggestion that the general attitude of the railways, from that angle which the public sees them, is: "Take our service or leave it; we don't care." And that attitude, fortunately for the railways, is facilitated by a long-suffering, uncomplaining, good-tempered public, not possessed by any other nation; and that right there lies the root of some of the trouble. Competent psychological and statistical research would prove whether this is so or not; certainly it is not in the railways' own interests both to plead and be their own judges. The scientific and outside point of view is both more accurate and more useful than that of those who are close up to the railways: it is free from prejudices and the influence of tradition and custom.

Well, here are a layman's very humble suggestions.

1.—Psychological research into the public's needs, wants, and desires, and present attitude towards the railways, carried out by first-rate psychologists.

2.—De-centralised executive control—that is, really able local executives at strategic centres, having adequate authority to discharge their important responsibilities in an effective manner.

3.—Much closer co-operation between the traffic and operating departments, and more flexibility in providing extra passenger equipment quickly when and where needed.

4.—A psychological study and analysis of the problems involved and methods needed to stimulate the employees to greater interest in their work, and the creation of better *esprit de corps*. Competent psychological research will indicate that both these matters are in urgent need of attention.

5.—Travelling inspectors—responsible men of suitable education and intelligence—reporting direct to the general management on what is actually happening, day by day, all over the system of everything from the punctuality, loading, cleanliness, and temperature of trains down to the toughness of the day's joint, the cold plates, and the waiters' dirty uniforms in the restaurant cars. These men should be, to borrow Paramount's news film slogan, "the eyes and ears" of the general executive.

6.—It would appear that some red tape needs to be, and can be, unwound in the operating departments, which lack of space prevents me from mentioning, but which would, on occasions when trains are already late, prevent them from losing still more time—a very common proceeding.

Finally, I only wish I had the opportunity to debate the whole question with railway experts: I believe I should give a good account of myself.

Yours faithfully,

G. N. MOUNT

[Although the suggestions are good, they have been made before. The problem is to devise some more efficient system than exists of rewards and punishments.—Ed. *R.G.*]

# THE SCRAP HEAP

Old Lady from Country, gazing at indicator board in London station: "Well, I declare, look at all that row of clocks, and not one of them right!"—*The "Tale of the Day" from the "News-Chronicle."*

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McTootal: Wasn't it rather risky telling the inspector that that man in the corner was travelling first with a third class ticket. How did you know?

McBeadle: I could see his ticket sticking out of his waistcoat pocket. Same colour as my own.

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On the day of a recent race meeting, two passengers were travelling on one of our main lines, when at one station the train seemed to wait rather longer than its schedule allowed. The passengers inquired of the stationmaster, who happened to be standing near by, the reason of the delay. With a broad grin on his face he replied, "Well, sirs, the train is two or three minutes early, but the guard is particularly anxious to await the arrival of the papers as he wants to see whether he has won anything on to-day's race." As one of the two passengers had a bet on the race himself, he immediately became interested and sympathised with the guard. However, the papers not having arrived after another five minutes, the stationmaster told the anxious guard that the train must leave without them. With great reluctance, the latter raised his flag and the interested passenger returned to his compartment.

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The driver of an express train was almost blinded while his train was travelling between Kralup and Prague. A flock of chickens, scared by the express, flew wildly from the track, but one hen flew straight for the glass panel of the driver's cab, hurtled through into the cab itself, and struck the driver in the left eye. The fireman took control of the train until it reached Prague, where the driver was rushed to hospital. He will probably lose the sight of the eye.—*A press message from Prague.*

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AVERTING A TRAGEDY.

Anyone who has travelled in American trains will remember the (to an Englishman) appalling heat maintained in railway coaches in "God's Own Country." A striking instance of the attitude of the hundred-per-cent. American to fresh air when travelling was told me by a young Englishwoman who was returning to New York from Chicago with her mind filled with tales of gangsters and their ways. Almost stifled by the heat in the carriage she rose and tried to open the window. At once two strong hands seized her by the shoulders, and she had the shock of her life, for she feared she was in the grip of a bandit. "Don't do it," exclaimed an earnest voice. "Don't do it, sister!" She turned and faced her supposed assailant. "Don't do what?" she asked, amazed. "Why throw yourself out of the window. What I mean, depression is bad, I guess, but not so bad as that!" From every point of view, as she says, it was a most illuminating experience.—*From "The Morning Post."*

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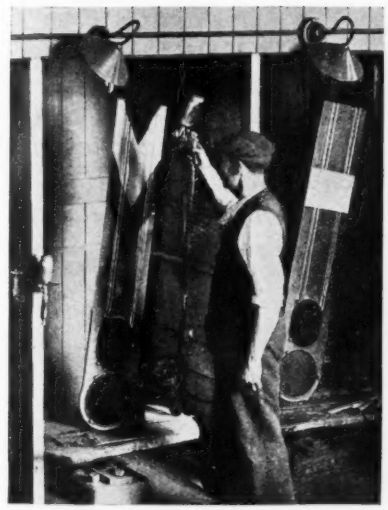


*Spray painting signal arms in the L.M.S.R. Crewe works*

His (Mr. Teeling's) most risky enterprise was prompted by his desire to gain a first-hand acquaintance with the life of those "hoboes" who make their way from place to place by "jumping" the freight trains. He went so far as to become one of these stowaways himself, but escaped the accidents to which those who adopt this means of travel are exposed, though there were moments when he confesses himself to have been "really frightened" by the perils of the journey. Sometimes, for instance, men who are thus stealing a ride are discovered by the railway police and thrown off a train while it is in motion. Some of them slip between the cars at night and are killed. Mr. Teeling was warned, too, of the peculiar danger of travelling in those "gondolas" which open downwards to let out the coal. If the car has not been properly closed after emptying, it may open again when the train goes fast, and the hobo will fall under the wheels. A single train, we are told, may sometimes have more than a hundred of such surreptitious passengers on board, many of them men of 60 or 70 years of age who have been following this life since they were 20.—*From the review of "American Stew" by Wm. Teeling in the "Times Literary Supplement."*

## GRAND INDEPENDENT PHILANTHROPIC NO-JUNCTION RAILWAY CO.

### CAPITAL £1,000,000,000,000,000,000,000,000.

The above Company is formed on principles entirely novel and purely *Philanthropic*, as there can be no prospect of a return for the capital invested.

It is intended to select the poor and unfrequented districts throughout Great Britain, and to extend to the remotest parts the blessings of Railway Enterprise, which, without the formation of this Co., will be left to hopeless and endless seclusion.

To show the sincerity of our intentions, we have selected a spot in Shropshire and another in Cheshire peculiarly favourable to this system of Railway communication, viz. Hadnal-Ease and Stoke. And as most of the Share-holding public have never heard of these places, we may mention that we believe the one to be in a very unfrequented locality in the neighbourhood of, but sufficiently remote from, the important town of Shrewsbury, to which we intend to give the GO BY! The latter is equally well situated with regard to Chester. Great care has been used to avoid the villages and towns, and excepting Wem,—a place of no great importance,—we flatter ourselves we have been eminently successful.

From Stoke we intend to pursue a new route along the Mersey to the new Docks at Birkenhead, in order to give some colour for a parliamentary case.

From Stoke we will run a very effective line, ingeniously avoiding the populous and rich City of Chester, to a point on the Sands of the Dee, and in order to convince the inhabitants of Chester that we have no deep designs of improving the navigation of that river, we intend crossing at an elevation at least exceeding a hundred and fifty feet.

The apparent object would be to join the Holyhead Railway, but from the great elevation this is almost impossible, and we have a more deep scheme in view, namely, in order to carry out the *Philanthropic* views of the Co., we shall have a Model Enterprise from which point we can with great advantage run lines towards Moel-Famma and other barren Mountains in North Wales.—We consider Moel-Famma a most important point to attain, in order to meet the great objects this Co. has in view.

There are peculiar advantages attending these routes. No one has any interest to oppose them, and from the almost total absence of population the dissents must be a very small quantum, and the opposition cannot be strong.

We may, however, mention, that as the Board of Trade has declared their intention to sanction no competing line which is not required by local wants, we are rather alarmed at the prospect of their not viewing our schemes in the true light.

But as we intend to join no existing Company, and hold out no inducements for their joining us, we cannot see any true grounds for alarm.

It is not our intention to confine our exertions to these plans alone, but other *Independent Philanthropic No-Junction Lines* are being projected: and the Projectors are ready to receive any suggestions as to proper routes, in which they will be prepared to invest their capital.

The Co. only see at present the necessity of expending about seven millions; but as the *Philanthropy* of the Co. is unlimited, so it is intended shall be the capital.

Our parliamentary influence is *not* great, but our *No-Junction* principles will carry us through.

All *Independent* and *Philanthropic* capitalists will have on application an unlimited number of shares allotted them.

Application to be made to the Secretary of the *Grand Independent No-Junction Railway Co.*, at Stoke and Hadnal-Ease, and an early application is *not* necessary.

For the G. I. P. N.-J. R. Co.
THE PROJECTOR.

NOTE.—Plans of the Line are being prepared at the Punch Office, and will be issued immediately.

NO MONEY RETURNED.

*An amusing skit on the many railway prospectuses which appeared during the boom of the 'forties. It is extracted from the "Railway Chronicle" of August, 1844*

# OVERSEAS RAILWAY AFFAIRS

*(From our special correspondents)*

*Safety record and one advantage of State ownership in New Zealand—Indo-Chinese railway developments—Part-restoration of wage cuts in Rhodesia—Hamburg's unusual bridge—Comprehensive Spanish electrification survey—P. & O. Special in Egypt—French inter-Colonial link—Diesel railcars, a new train-ferry and cruising train in Argentina*

## NEW ZEALAND

### Railway Safety

A striking indication of the safety of railway travelling compared with other forms of transport is found in New Zealand in the reports recently presented to Parliament by the Railway Department and the Transport Department respectively. These show that, in the last four years, 733 persons were killed in motor accidents (of whom 181 were pedestrians) whereas in the last eight years—twice the period—the railways here have carried 180 million passengers without one fatality. It is evident that road service control has to go a long way in the provision of safeguards before it can attain to anything like the safety system which years of study, enterprise, control and vigilance have given to the railway system of this country.

### Co-ordination between Post Office and Railways

Under a new arrangement, the delivery of inward railway parcels in Auckland City, formerly made under contract with private firms on behalf of the railways, has been taken over by the Post and Telegraph Department. This is a State economy measure, as the latter Department has a fleet of large and small vans for the transport of mails and is able to do the additional work without obtaining more vehicles or adding much to the mileage run. After collection, these railway parcels are treated on the same footing as parcels received by mail. They are taken to the central Post Office depot, sorted with postal parcels, and combined loads are made up for delivery in various parts of the city.

### New Second-Class Coaching Stock

Smart in appearance and embodying many of the latest features in carriage design, some new second-class cars have just been turned out by the North Island railway workshops. In these the essentials of modern comfort and convenience have been carefully studied and put into practical use. A special clip for holding doors firmly in position, leather-linked dust mats, and special resilient springs to ensure easy movement whilst in motion are among the new features. The cars accommodate 46 passengers. The seats are finished in a leather surface and adjusted in a restful travelling position. There are six double lights, with switches beside the seats instead of being attached to the roof (alongside the ventilators) as in former models.

## FAR EAST

### Recent Construction in Indo-China

The substructure work on the Tourane-Kwang Ngai section is completed, and the laying of the permanent way is now being pushed forward. This division forms part of the important Tourane - Nha - Trang line, 337 miles long, which, when completed, will connect the extremities of the present isolated systems in the north and south, and enable them to be worked as one railway. Other sections recently opened to traffic include the line built, under the direction of the Southern System, from Pnom-Penh to Battambang, 170 miles, and the extension on to Mongkol Bory, which was opened to traffic last summer; a line from Ben-Dong-Xo to Loc Ninh, 44 miles, and the l'Arbre Broye-Dalat section of the Krongpha-Dalat railway. On the trans-Indo-China line from Tanap to Thakek, only the first 12 miles out of Tanap and the first 10 miles out of Thakek have been finished, but the substructure work over the remaining 95 miles is well under way. A proposal is also on foot to link this railway with Kampong Thom by a 400-mile line running across the Mekong basin and into Cambodia. All the above lines are laid, or are being laid, to a gauge of one metre. Six railcars of the Micheline type have recently been ordered, and trials are to be conducted with a view to extending this method of operation to both the Northern and Southern Systems.

*Map showing existing railways and lines under construction in Indo-China and neighbouring countries*

## BRAZIL

### Leopoldina Railway

In order to modernise the illumination on the 10-coach suburban sets—consisting of two second-class brakes, four second-class and 4 first-class coaches—which work between Barao de Mauá, Penha (11·9 km.) and Caxias (19·2 km.) and convey an exceedingly heavy traffic in the morning and evening rush-hours, the Leopoldina Railway is replacing the existing acetylene lamps with Stone's system of electric lighting. The third coach from each end of the

set is a master coach, carrying a Lilliput dynamo (Type 4A), which supplies two batteries, each containing 19 Alconum cells (Type 525W), with the current necessary for the lighting of the master coach itself and the two vehicles on each side of it. In each guard's compartment is fitted a three-way switch, to light either all the train lights (and the side-lights of the corresponding brake-coach) or only a certain proportion of the train-lights. At present, work is in hand on three of the suburban sets and it is expected that subsequently the remaining five will be equipped with the new method of illumination.

### São Paulo Railway

Recently a Government decree was issued abolishing all payments in gold, whole or partial, to foreign public utility and transportation companies operating in Brazil, this decree affecting, among others, the São Paulo Railway Company, which had always been empowered to charge its rates and fares on a differential basis, according to the rate of exchange. Shortly after the promulgation of this decree, the Minister of Communications requested the Federal Inspector of Railways to arrange for the railway concerned to submit, within 30 days, an entirely new scale of rates and fares, to rule during 1934. In the interim, the charges which were in force at the time the railway received an earlier notification from the Ministry, and which are, in general, lower than those of the other railways in the State of São Paulo, will hold good, but without any exchange variations.

## RHODESIA

### Rhodesian Timber Resources

It appears probable that Rhodesia will obtain a larger share of the contracts for the supply of timber sleepers to the South African Railways. The Railway Board of the Union has recently visited the Zambesi Saw Mills, at Livingstone, and the Rhodesia Native Timber Concessions, and was favourably impressed by the enterprise shown in developing the timber resources from the point of view of the supply of sleepers to the railways. These sleepers are being extensively utilised on the Rhodesia Railway system.

### Wage Cuts Partially Restored

As a result of the continued upward tendency of traffic, the Rhodesia Railways have restored 5 per cent. of the 10 per cent. and 7½ per cent. temporary cuts made in the salaries and wages of their employees two years ago, while the workshops staff who were working short time will have their working hours increased. The General Manager in announcing this decision stated that although the revenue is about 40 per cent. below that of the peak year of 1930, the economies that have been effected have enabled the railways to show a much more satisfactory net operating revenue this year than last.

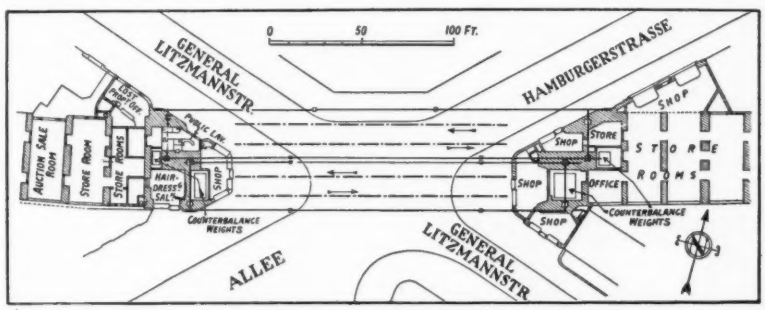
### Reduced Charges for Passengers' Cars

Special reduced rates have been introduced by the Rhodesia Railways for motor cars accompanying passengers travelling by rail, both in bookings locally, and also, in conjunction with the S.A.R., to points in the Union beyond Mafeking. Two adult return tickets must be purchased to obtain this facility, and the motor car may not be off-loaded at stations en route in either direction.

## GERMANY

### Attractive and Remunerative Bridge

Close to the municipal boundary between the twin cities of Hamburg and Altona four streets intersect in an open space, known from its shape as the Star, and over which a four-track line of the German State Railway is carried by an attractively designed plate girder bridge built seven years ago. The abutments were built so as to form shops or offices, as shown on the accompanying diagram taken from *Die Reichsbahn*, thus enabling rental to be gained from ground which would otherwise have yielded no return, and at the same time making the site of




*Site of four-track State Railway bridge spanning the Star in Hamburg*

the bridge a pleasant place in contrast to that of most big bridges carrying railways across streets in towns.

### Increased Travel Attractions

The latest programme of attractions for tourists issued by the German State Railway contains some notable innovations. For instance, a fare reduction of 25 per cent. is allowed to all passengers not resident in Germany, and the tickets are available for two months. This reduction is also available for journeys through Germany from frontier to frontier and back at a later date, the only condition being that the return journey through German territory must not be completed before the eighth day. Journeys may be broken as often as desired and different routes may be followed outward and return.

Also, a further reduction in the number of passengers qualifying for "party" rates is introduced, and specially low rates for the carriage of toboggans, skis, bicycles and folding canoes are quoted.

Many resorts are co-operating with the State Railway, all-inclusive three-week "cures" being arranged in conjunction with a group of the principal spas, at moderate prices. Comprehensive plans have also been made by the winter sports centres.

## SPAIN

### Electrification Schemes

The financial aspect of the proposed electrification of the Avila and Segovia lines of the Northern Railway Company is now giving rise to discussion in official quarters in Madrid, following upon the lengthy correspondence which has recently appeared on the subject in the technical and daily press. The figure which has always been referred to as the amount considered to be required for the scheme is ten millions of pesetas yearly, until completion. It is now suggested that the question of railway electrification should be considered more widely, and that electric traction should possibly be installed on all sections where preliminary investigations can justify the financial outlay, whether in terms of increased potential traffic or with a view to relieving existing congestion. The alternative routes on the Catalan system of the M.Z.A. running out of Barcelona, and familiarly known as the M.Z.A. "Eight," are mentioned as sections where electrification would probably be justified. If, in addition, part of the Valencia district, which is also congested, and the extension of electrification on the Northern main line beyond Avila and Segovia as far as Medina—that is to say, beyond the mountain section—were considered as a widespread general scheme, it seems probable that the matter of capitalisation with a State guarantee would be easier than if individual schemes were left to the various companies to carry out independently. Should this general scheme prove to be feasible it is probable that the leading manufacturers in Spain would form a syndicate in order to tender for the supply of material, as one of the conditions of the State

guarantee would be that, as far as possible, all such material would have to be of national production.

## EGYPT

### P. & O. Port Said–Cairo Special

By joint arrangement between the Egyptian State Railways and the P. & O. Steam Navigation Company, a special train will be run from Port Said to Cairo each week during the winter season, until March 14, on arrival of the mail steamer from Europe. It will consist of first-class accommodation only, will include a Pullman, and is timed to leave Port Said, Gare Maritime, about three hours after the steamer's arrival time, normally 7 a.m. on Wednesday. Passengers are conveyed free by tender to the Gare Maritime, where the customs examination takes place, and tickets, obtainable at P. & O. offices and from the purser on the ship, are issued at a fare of £1 4s. for adults and 12s. for children between the ages of 3 and 10 years.

### Establishment of New Halts

In order to combat road competition and at the same time permit of the running of steam railcars and autotrains under the most favourable conditions, a number of additional halts is being constructed on the State Railways system. Since May last eight have so far been opened and several others have been agreed to in principle. On single lines these new halts will not as a rule in the first place be provided with platforms, owing to financial stringency. The ground is being levelled and a name board and lamp erected, permanent way warning discs being fixed at a distance of 800 ft. as a guide to drivers. Passengers entraining at these halts will be supplied with tickets by the guards of the trains or railcars. As soon as any of these halts proves to be a paying proposition, an agent and watchman are appointed and a small station building and platform are added when the opportunity presents itself. On the double line, halts are provided with up and down platforms.

### Gabbary Yard Remodelling

Extensive remodelling works at Gabbary marshalling yard, Alexandria, are in hand, and £E.12,000 is proposed for inclusion in each of the budgets for 1934-35 and 1935-36, for its completion. The additional modifications will facilitate the working of loads from Forn El-Guiraya yard into Gebel El-Zeitoun, Basha and other sidings and the removal of empties therefrom, and are planned to permit of several operations being carried on at the same time, which, with the existing layout, is not possible. The additional facilities proposed will enable traffic to be more expeditiously berthed and improve the turn-round of rolling stock at this most important yard. The proposed scheme also ensures a larger measure of safety for passenger trains to and from the Mariout line, which have to cross various goods running lines at Gabbary Cabin 1 and at present are afforded no protection by interlocking. Gabbary Cabin 2 will, except for a small control on the main line, be eliminated and the block section will be Cabin 1-Cabin 3, permitting of the removal of two large gantries, unnecessary points and crossings and generally improving the working of the yard.

## ARGENTINA

### Diesel Railcars

The B.A. Provincial Railway has authorised the purchase of four diesel-electric railcars from Babcock & Wilcox & Co. Ltd., Bilbao. The price of each coach is stated to be 460,000 pesetas.

### Proposed New Train Ferry

The Argentine State Railways authorities have under consideration a project for installing a train ferry service between Santa Fé and Buenos Aires, which would enable passengers from the north of the Republic over the State lines to travel through to Buenos Aires without transhipment at Santa Fé, as at present. The cost of the scheme which, presumably, would be similar to that operated by the Entre Rios Railways between the ports of Zárate and Ibicuy on opposite sides of the Paraná River, is estimated at $12,000,000 paper. The scheme would be a step in the direction of giving the State Railways direct access to the Port of Buenos Aires, and would compete seriously with the passenger and freight traffic of the Central Argentine Railway, which connects the cities of Santa Fé and Buenos Aires. The Argentine Minister of Finance is reported to be in favour of the project, and the Chief Constructing Engineer of the State Railways (Señor Carú) and other officials recently visited Santa Fé to select a suitable site for a wharf and other works.

### Train Cruising

During the month of November last the B.A. & Pacific Railway organised a railway cruise on similar lines to that recently organised by the L.N.E.R. (*vide* THE RAILWAY GAZETTE *of June* 23, 1933). The venture, which marked a new departure in Pacific railway travel, was well patronised, considering the existing bad times. The train, which had accommodation for 70 passengers, was composed of an engine, luggage van, staff sleeping car, bath coach, four sleeping cars, restaurant car and two Pullman cars, the total tare weight being 484 tons. The sleeping coaches were all of two-berth compartment type, one compartment being allotted to each passenger. To provide space for dancing, the tables in the saloon of the rear Pullman were removed and only a limited number of seats left in it. The other amenities consisted of an orchestra, radio installation, writing room, hairdressing saloon, a weighing-machine and a bookstall. The bath coach, provided with hot and cold showers, comprised five compartments. The train left Buenos Aires on November 11, and the principal points visited were San Rafael, Mendoza—where two days were spent, the itinerary including a trip over the Transandine Railway to the thermal hotel at Cacheuta —San Juan, San Luis, Villa Dolores, Yacanto—a famous holiday resort, where the railway company has a very fine hotel—and Mina Clavero. The time occupied on the tour was nine days, the distance covered being about 2,000 miles, exclusive of motor-car trips. The price of the tickets was $340.00 Argentine paper, approximately equivalent, at present exchange rates, to £20.

## FRENCH COLONIES

### Opening of the All-important Through Route Across North Africa

Important progress is reported in the development of the North African railways. The railway systems of Tunisia, Algeria and Morocco are now connected and it is possible to run through trains from Tunis and Bizerta to Constantine, Algiers, Oran, Oudja, Fez, Rabat, Casablanca and Marrakesh in southern Morocco, a total distance of 2,300 km., or not far short of 1,500 miles. The through line was opened for goods traffic on January 1 and the official inauguration for passenger traffic is fixed for April 1. Completion of the line between Fez and Taza, a section presenting numerous engineering difficulties, formed the last link in the chain connecting the Moroccan railways with the previously completed line between Taza and Oudja on the Algerian border. This linking up of the railway systems is an event of great political and economic significance. Another important development is the electrification of the Moroccan line from Casablanca to Marrakesh, which is now in operation for the entire distance of 175 miles. The line from Casablanca as far as Mechra ben Abbou was electrified some time ago and the final section to Marrakesh has now been finished. An electric train was run from Casablanca to Marrakesh recently for the official trial. The test showed that the journey can be done in four hours by electric train, as compared with 5½ hours required by steam traction. Steam trains, however, will continue to be used for goods traffic.

Two diesel-electric locomotives have been placed in service by the P.L.M. Algerian Railways. They are intended for fast running with light trains on the line from Algiers to Oran. Their tare weight is 70 and 95 tons and the corresponding power is 750 and 920 h.p. The diesel locomotive should prove well adapted for the long run on the new through line of the North African railways, where lack of water is sometimes a difficulty if steam locomotives are employed, and it has been proposed to use powerful diesel-electric locomotives on the projected trans-Saharan railway.

# RE-SIGNALLING OF YORK—NORTHALLERTON MAIN LINE, L.N.E.R.

***The following description is supplementary to that published in "The Railway Gazette" of April 28, 1933, and should be read with it. Some of the principal additions now described include Thirsk box which replaces five old boxes, relay interlocking, automatic train recorders and route signalling, one switch controlling up to 15 point and signal movements***

IN consequence of the widening of the line at various points between York and Northallerton—the subject of an engineering article in our issue of July 21—considerable alterations to the permanent way and other works were necessary, and complete re-signalling of the stations and other interlockings was required.

The first portion of the re-signalling to be brought into use lay between Alne and Green Lane signal-box, Thirsk, and this was completed on April 2 last, and was described in the issue of THE RAILWAY GAZETTE dated April 28, 1933. Further work has been brought into use in stages since that date, and the whole of this interesting installation was completed on Sunday, November 19, when the five existing manual signal-boxes at Thirsk were replaced by a new central relay interlocking. This latter installation marks a further milestone and definite stage in the history and progress of signalling development, and is believed to be the first installation where miniature levers have been displaced by a combined switch and diagram panel, embodying the route system. It is also interesting to note that the area covered by the new interlocking at Thirsk extends over 4¼ geographical miles, which is easily the largest in point of area controlled by a single box, in so far as Great Britain is concerned.

Additionally to the substitution of new boxes for those existing at Alne and Sessay Wood in the area first opened, those at Beningbrough and Otterington have also been replaced. Then, besides the erection of one central box instead of five at Thirsk, eight other boxes, making thirteen in all, have been dispensed with.

## Relay Interlocking

With the exception of Poppleton Junction and Northallerton High Junction—the latter is now known as Northallerton—all the signal-boxes have been equipped with relay interlockings. The arrangements at Thirsk are described in detail later. At the remaining boxes new mechanical lever frames of the L.N.E.R. N.E. Area standard pattern have been installed, the levers being employed only for the operation of points which are within the prescribed distance for mechanical working from the signal-box, and manually controlled shunt signals.

The operation of the colour light signals and power-operated points, and shunt signals leading over power-operated points, is carried out by means of small thumb switches incorporated on the illuminated diagram, the latter being placed immediately over the lever frame in the position usually occupied by the block instruments and bells.

On the diagram the following indications are given:—

*Track Circuits*

No light when clear.
Two White lights when occupied.

*Colour Light Signals and Shunt Signals*

One Red light in the centre of the switch for the normal or "On" indication.
One Green light adjacent to the switch for the "Off" position (yellow, double yellow or green).

## Point Indications

The actual direction of points is given by means of a lamp behind a blued glass upon which is a black line, two separate lamps and glasses being used for each point end, that is, one lamp for normal and one lamp for reverse. All the interlocking between levers and switches is accomplished electrically, no mechanical locking of any kind being provided. Functions controlled by switches are operated through interlocking relays, and those operated by mechanical levers, through a combined lever lock and circuit closer on each lever.

The adoption of the relay interlocking system, apart from centralised traffic control systems, is unique in this country. It should be stated that the thumb switches are not locked in any way, but are free to be turned at any time, the control function being inoperative unless all the controls and interlocking permit of its being correctly effective.

The first relay interlocking, at Sessay Wood, was brought into use in March and the satisfactory performance of this, and others brought into use subsequently, have fully justified the confidence placed in the system. It should also be mentioned that the N.E. Area has a relay interlocking in operation at Goole, described in our issue of June 9, 1933, which has given every satisfaction.

At Poppleton Junction and Northallerton colour light signals and power-worked points are controlled in the usual manner through circuit closers on the respective levers in the mechanical locking frame and these are the two exceptions alluded to above where ordinary mechanical interlocking has been provided.

## Double Yellow Aspect

The colour light signals are of the British Power Railway Signal Company's type, as described in the first article. The fourth aspect of double yellow, where used, is employed as follows:—

(*a*) To give the necessary warning to drivers that the signal ahead which is showing a single yellow is not fixed at braking distance from the second signal ahead showing red.
(*b*) To give the necessary warning at the signal in rear of a junction signal that a speed restriction is necessary over the junction.

The giving of the double yellow aspect has had a great effect in the speeding up of traffic, whilst giving the necessary warning to drivers. As related in our previous notice, on some sections of railway this warning has been given by retaining the junction signal at red until the outer signal was passed, thus a driver was given no indication as to the condition of the section ahead, and the adoption of the double yellow at these places has solved the difficulty in a very practical and satisfactory manner. In one or two cases, however, a green is given when the junction ahead is set and the road clear, and this was considered quite appropriate, as the junction signal is fixed about 600 yards from the junction facing points. Attention is directed to signals D21B and U22 at Thirsk. It will be appreciated that conditions may arise which would prevent the display of a double yellow aspect when required, *e.g.*, in the case of one train following another with a very close headway, and it may conceivably happen that should the first train be further checked, the driver of the second train would not receive the double yellow at the appropriate moment. The purpose of these signals is to ensure that the double yellow

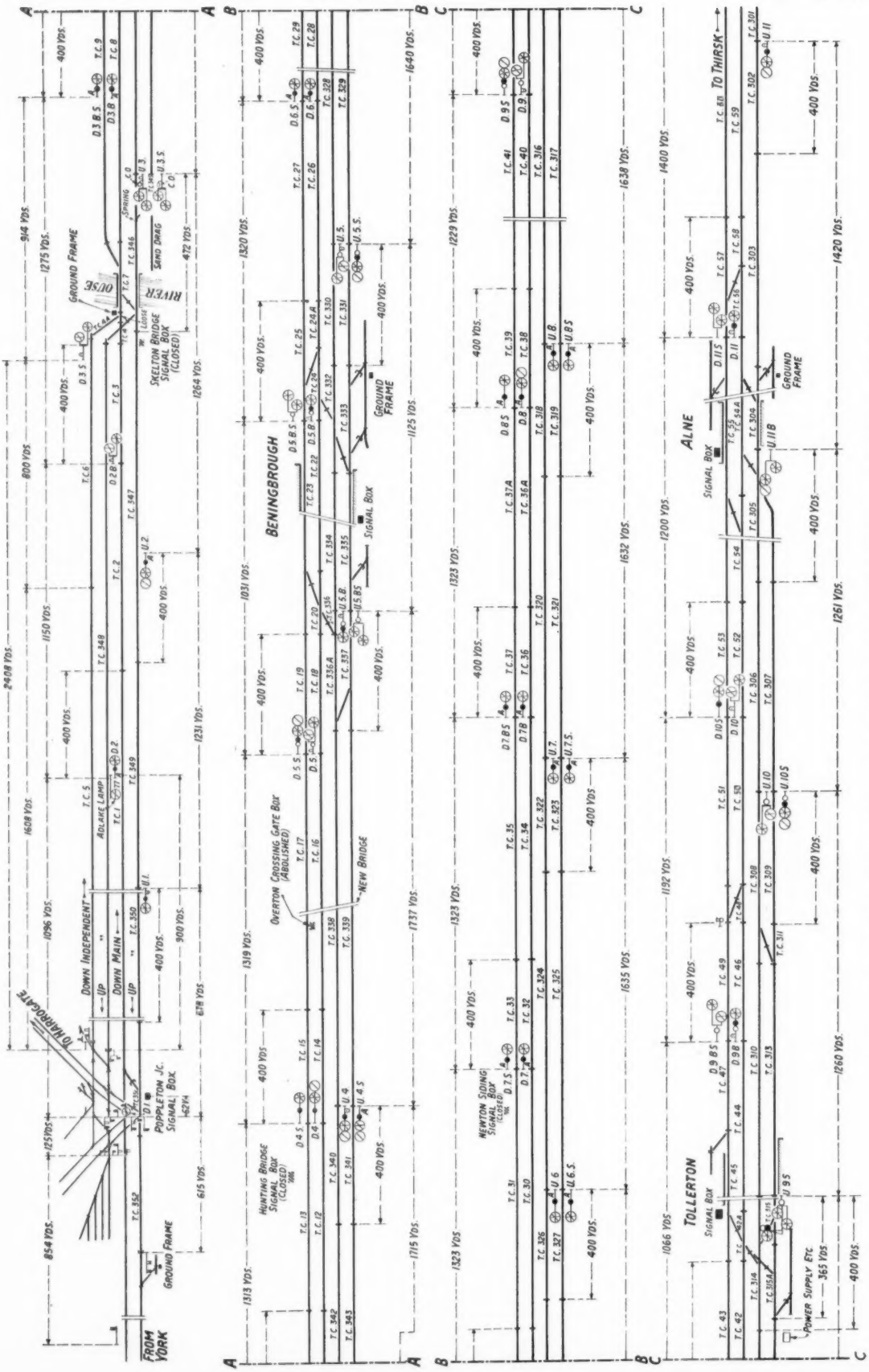



*Diagram of the Poppleton Junction-Alne section, York-Northallerton re-signalling, L.N.E.R.*

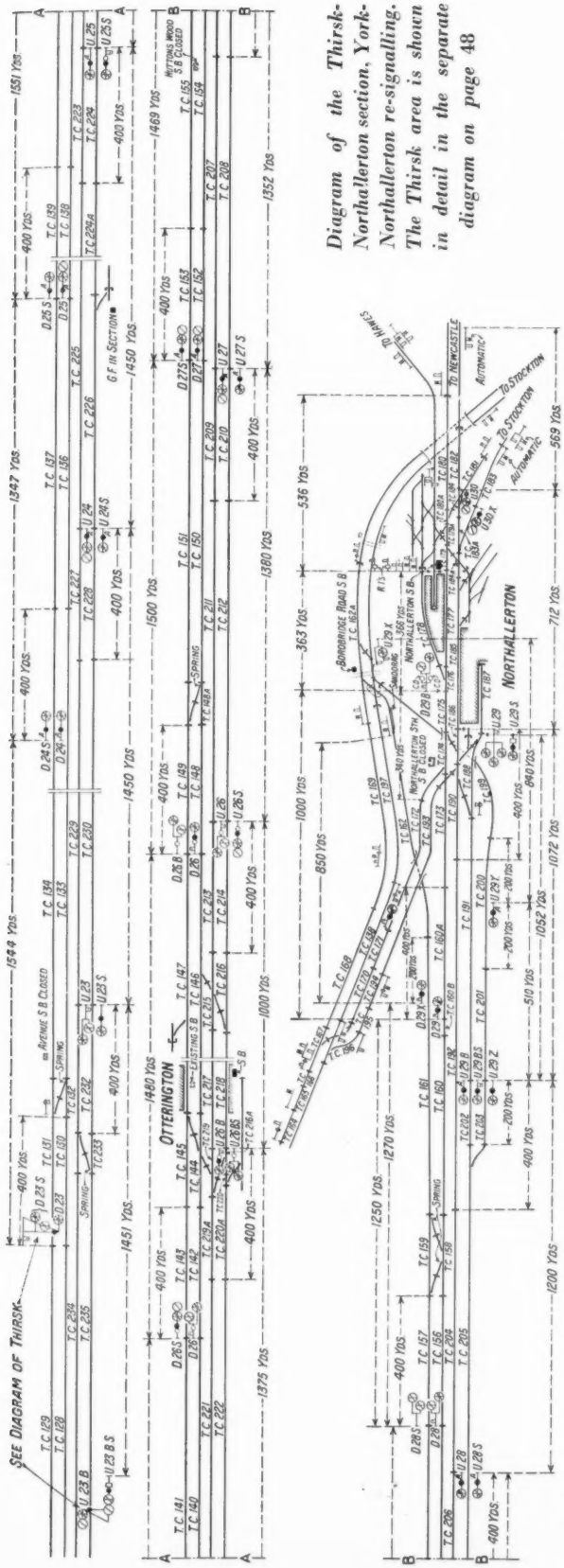



*Diagram of the Thirsk-Northallerton section, York-Northallerton re-signalling. The Thirsk area is shown in detail in the separate diagram on page 48*

aspect is always displayed when required, no matter what the traffic conditions be.

To avoid multiplicity of lights where slow running is concerned, route indicators of the multi-lamp type are employed. These have proved very efficient. They consist of a series of lamps fitted behind a yellow tinted cover glass which has been found to prevent the effects of glare and sunlight.

Other interesting points in connection with the layout are as follow:—

(1) The points and signals at Skelton Bridge are now controlled from Poppleton Junction, a distance of 1½ miles.

(2) Northallerton (High Junction) Box now performs work previously carried out by four boxes. Two of these, however, were dispensed with before the work has commenced, the furthermost points controlled from Northallerton are located on the Leeds Northern Lines, 1¾ miles from the signal-box.

A remarkable result achieved by modern signalling is that despite the amalgamations carried out at Northallerton and also bearing in mind the additional lines controlled from this signal-box, it has been possible to effect a reduction in the size of the lever frame from 105 to 95 levers, of which latter 14 are spare.

### Spring Points and Sand Drags

Some of the trailing points, over which shunting operations are not carried out, *i.e.*, which are used entirely in the trailing direction, have been made spring points and not connected to the box in any way. They are electrically detected and controlled by the mechanism of any points which conflict with them.

At Skelton Bridge, in the up direction, and at Sessay Wood, in the down direction, facing safety points, leading to sand drags, have been provided, owing to the reduced overlap available, and the special controls on the respective signals will be readily understood.

The following features: position white-light shunt signals; approach lighting; auxiliary lights; telephones; power supply, and track circuits were all described in the article of April 28. It may be added, however, that the lenses of the shunt signals are specially etched to produce a light as near as possible to lunar white. The lamps are 110-v., 25 W., pearl type, gas filled and so arranged that they can be switched out when not required. At night time the voltage is reduced to about 45 in order that the indication shall not be too brilliant. This innovation has been appreciated very much by the operating staff.

On the subject of the auxiliary lights it should be observed that in the case of single signals, sometimes controlled and at other times automatic, two auxiliary lamps are provided. One of the auxiliary lights is arranged to display an illuminated white "A" when the signal is at "stop"—irrespective of the main signal lamp—when the signal is being worked automatically; the other auxiliary lamp functions when the main signal lamp fails. Experiments are being made with double filament lamps, and if successful it is hoped to dispense with the whole of the red auxiliary lights.

Our previous reference to the series-phased track circuit may now be supplemented by the accompanying diagram. The overlap track circuit ahead of each signal is 400 yards in length and the use of a step-up transformer for the berth track enables the relay to be located at the rear signal without the use of special heavy line wires. The berth track circuit is fed in the usual manner through the overlap track ahead and by this combination the testing and tracing of faults at the signal itself are rendered very simple. All overlap track circuit relays are wired as stick relays, proving that the signal mechanism has gone to red on each occasion when a train has occupied the overlap track circuit.

At signal-boxes the relays are placed on the ground floor on teak relay racks which are built up on angle

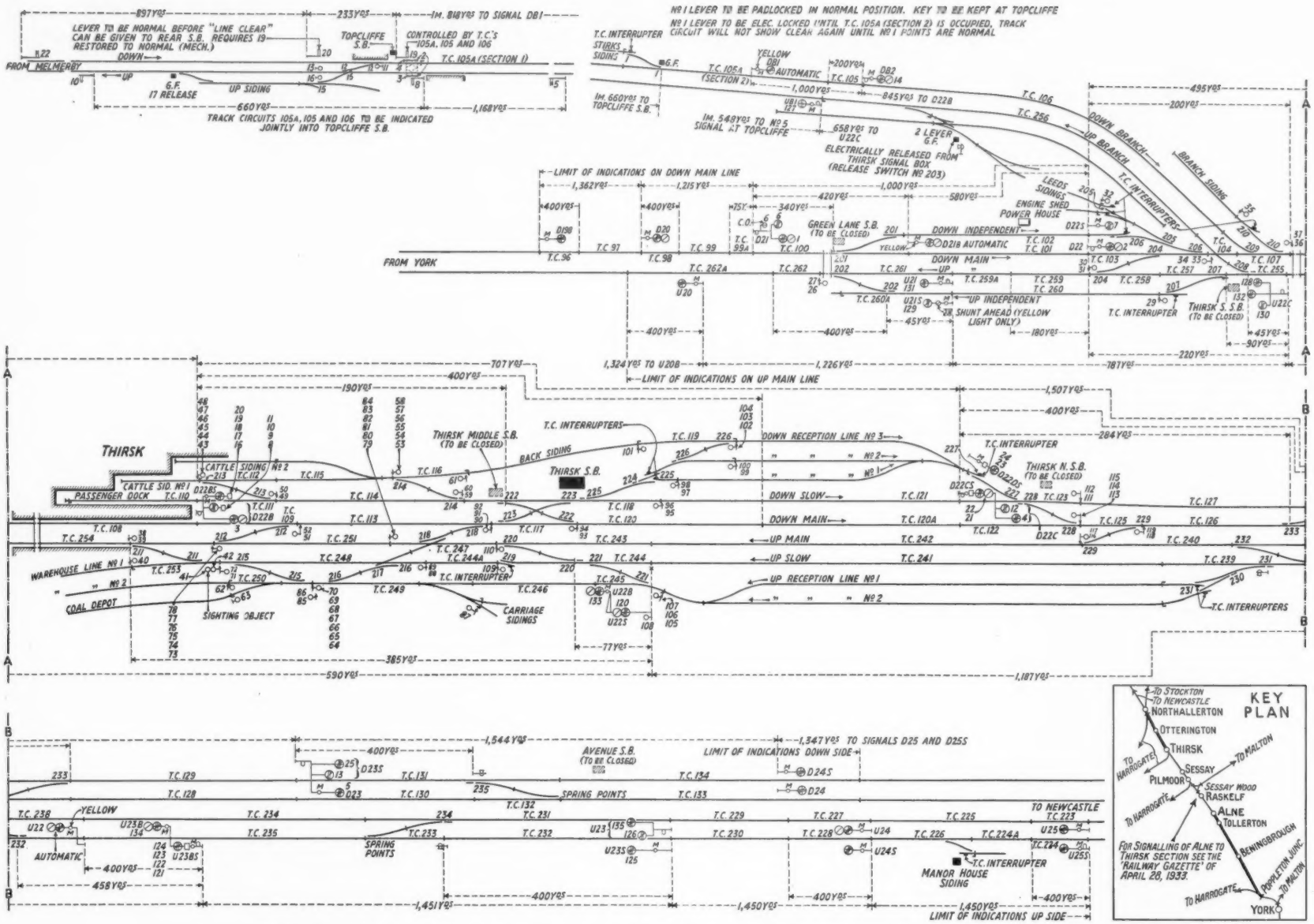



*Diagram of the area controlled by Thirsk signal-box, York—Northallerton re-signalling, L.N.E.R.*

*Thirsk signal-box*

irons. At outside places the apparatus is fixed in standard cast-iron apparatus cases. A multicore control and indication cable is terminated at these cases in sealing ends, but the main 660-v. cable is linked into a separate transformer case containing a 660/110-v. tapped transformer for supplying the location.

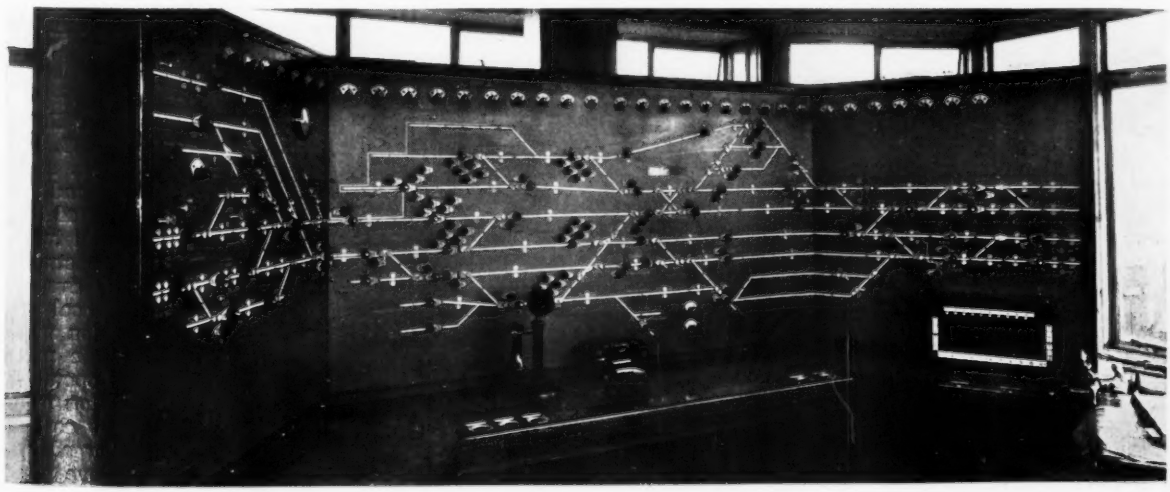
### Thirsk

The signal-box at Thirsk is divided into three sections. On the ground floor are two rooms, the one on the left in our illustration being employed as a workshop and depot for the maintenance staff and also to accommodate the batteries for the operation of points, &c. The one to the right is employed as a relay house. The panel itself is installed on the upper floor. The cabin is of pleasing appearance, being glazed all round and fitted with Vita glass. The panel, it will be noticed, is built in three sections, the side panels making an angle of 135 deg. with the centre panel, and its length is 12 ft. overall. Had an ordinary power frame been employed, a frame of 170 miniature levers, occupying at least three times the size of the present panel would have been required, and—what is very important—an increase in operating staff would have been necessary.

At the right of the panel is a small plugless switchboard which enables the signalman to communicate with all the circuits radiating from the box. A loud speaker has been fitted to the top of the panel, and a microphone in front enables the signalman to carry on a conversation with the Main Line Control at York whilst not interfering with his ordinary duties. The only block working involved is in the up direction between Thirsk and Topcliffe, and the block indicator for this section has been incorporated in the panel and the bell key fitted on the table in front of the panel.

So far as other sections are concerned, trains leaving Thirsk are described by the Thirsk signalman to the boxes concerned by means of bell keys placed on the desk in front of the panel. For trains approaching Thirsk automatic train recorders are being installed. These will give a permanent record of the class of train described from the respective signal-boxes in the rear, and, in the case of an emergency signal being received, an audible indication as well as a visual one.

The adoption of relay interlocking is quite a radical departure so far as this country is concerned, but when one considers the developments in signalling during the last few years its introduction appears to be quite a natural development. So far as power installations are concerned, progress of late years has been concerned with the elimination of the mechanical interlocking, and, this having been accomplished, there appears to be no reason for the retention of the minature lever. Tradition, however, dies hard, but it is anticipated that experience gained with the



*Control panel in Thirsk signal-box*

installation under notice will fully confirm the accuracy of the above statement. If the sphere of control at interlockings is to be extended appreciably—and no doubt that is the tendency of modern signalling development—it may be that the power frame with the miniature levers, as we know it to-day, will have to make room for something much more flexible and convenient from an operating point of view.

It should be emphasised that, apart from the combined panel and diagram replacing the conventional miniature power frame, the interlocking and circuit arrangements are similar to those at the usual power interlockings and quite different from what is known as centralised traffic control.

The route principle has been adopted at Thirsk; that is to say, instead of separate switches being provided for each individual function, switches are provided for each route, and the operation of a switch actuates the whole of the functions required to set up that particular route, including the appropriate signal.

In one case, which shows the flexibility and labour-saving accomplished by the system, a single switch operates 14 sets of switches and one signal, the total time required for operation being six seconds. This means that the signalman for this particular function has only one movement to make instead of eight. Another advantage of the route system is the simplification rendered possible in the interlocking circuits. In fact, it may be said with every confidence that the introduction of relay interlocking, with route signalling where necessary, has considerably enlarged the field whereby modern signalling can be employed to effect further economies from an operating point of view.

Along the top of the panel are provided emergency switches which enable points to be worked individually either in case of failure or whenever it is necessary to make abnormal traffic movements which are not signalled.

The power for the operation of this interlocking is obtained by means of:—Oil filled step down 16 kVA. transformers, in duplicate, fixed in the under portion of the signal-box which step down the voltage from 660 to 110. The necessary power for operation of the points is obtained from a battery of nickel cadmium cells, trickle-charged from metal rectifiers, the rectifiers being fed from the 660-v. a.c. supply. Rectifiers in duplicate are also provided for converting the 110-v. a.c. into 25-v. d.c. for operation of the lock relays, &c. A separate transformer is provided for supplying power for the indications on the panel, this being connected to the 110-v. a.c. supply and arranged to give a voltage of four across the lamps.

At Thirsk, as at all the other signal-boxes concerned in this installation, there are no primary batteries employed whatever. Even for telegraph instruments, bell circuits, &c., the a.c. signalling supply has been made use of, the necessary d.c. supply being obtained by small lead acid cells trickle-charged from metal rectifiers. In case of breakdown of the normal power supply, this interlocking is fed from the emergency plant at Thirsk previously described.

In accordance with the North Eastern Area standard practice, emergency detonator placing machines are fitted at each signal-box throughout the widening, those at Thirsk being operated electrically by means of small switches on the panel.

The electric controls of the signals and points are in accordance with the North Eastern Area standard practice, a full measure of direct track locking being employed in the point circuits and, in addition, the whole of the signals concerned are approach locked.

*Left: Position white-light shunt signals at Thirsk. Right: Down signals at Bishophouse Junction, Sessay Wood*

The whole signalling scheme was developed in collaboration with, and to meet the requirements of, Mr. C. M. Jenkin Jones, Superintendent, and Mr. C. M. Stedman, Locomotive Running Superintendent, North Eastern Area, London & North Eastern Railway, and the work has been carried out under contract by the British Power Railway Signal Co. Ltd., allied contractors being the Siemens & General Electric Railway Signal Co. Ltd. and Siemens Bros. Ltd., Mr. S. L. Glenn being in charge of the work for the contractors. The scheme was carried out under the instructions of Mr. John Miller, Engineer, to the designs and under the supervision of Mr. A. E. Tattersall, Signal and Telegraph Engineer.

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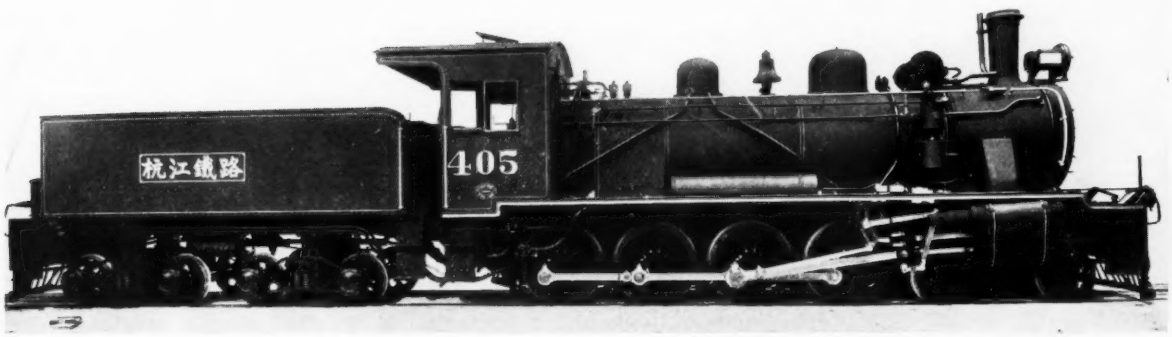
ROAD AND RAIL COSTS IN SOUTH AFRICA.—In his report on the working of the railways and harbours in the Union of South Africa for the year ended March 31, 1933, Mr. T. H. Watermeyer, the General Manager, gives some valuable comparisons of the actual cost of road and rail operation in South Africa. It has been freely stated that road motor transport is more economical than rail transport, but in South Africa at any rate this is demonstrably not true. On the South African Railways the average cost, including interest, of conveyance of goods, coal and live stock traffic is less than 0·9d. per freight ton mile. The South African Railways operate 9,928 route miles of road motor services and the average cost of operating these services is approximately 4d. per freight ton mile. Mr. Watermeyer is careful to point out that by cost of conveyance he is not referring to the rates charged but to the cost of performing the service. The above mentioned average of 0·9d. covers traffic giving bad loads as well as good and also covers empty haulage.

# LIGHT-WEIGHT EIGHT-COUPLED ENGINES FOR CHINA

*New design constructed to metric measurements incorporates a number of British and American features*




*British-built mixed traffic locomotive for Hangchow*

SIX 4-8-0 locomotives for mixed service have just been shipped by the Hunslet Engine Co. Ltd., to the Hangchow-Kiangshan Railway, on whose behalf they were ordered by the Boxer Indemnity Purchasing Committee. Embodying a number of American constructional features, these engines, which were built to the inspection of Messrs. Sandberg, of London, are fitted with Nicolai piston valves, which in addition to their steam distribution function, also act as pressure release and equalising valves between the two ends of the cylinders. The valves are actuated by Walschaerts gear of normal design. Superheaters with multiple-valve regulators were supplied by the Superheater Co. Ltd., and a point of interest is found in Stone's turbo-electric lighting system in that the installation provides light for the train as well as for the engine headlamps.

In order to work stock with varying coupler heights, two sets of the English Steel Corporation's Visco automatic couplers have been fitted on each buffer beam. Other special equipment includes Westinghouse brakes, pneumatic sanding and steam heating gear; Roberts' asbestos boiler mattresses; Coale pop safety valves, and Isothermos axleboxes for the tenders. Special attention was given to the lubrication system, which is largely to American standards, and was supplied by Messrs. Whitelegg and Rogers. All the coupled axleboxes are fitted with Ajax automatic hard grease lubricators, and the bogie boxes with soft grease lubricators of the same type. For use in the running sheds, an Ajax pneumatic grease-block compressing machine was sent out with the engines for making the axlebox blocks, together with a hand compressor for pressing the sticks used in the grease guns. Lubrication of the valve motion and connecting and coupling rods is effected by Tecalemit grease nipples, with Tecalemit spring-feed lubricators for the crossheads and slide bars.

Main particulars of these engines, other than given on the diagram, are as follow:

| | |
|---|---|
| Gauge .. .. .. .. | 4 ft. 8½ in. |
| Cylinders .. .. .. .. | 16½ in. by 21⅝ in. |
| Evaporative heating surface .. | 871 sq. ft. |
| Grate area .. .. .. .. | 19·4 sq. ft. |
| Superheating surface .. .. | 376 sq. ft. |
| Tractive effort at 75 per cent. boiler pressure .. .. .. .. | 19,500 lb. |

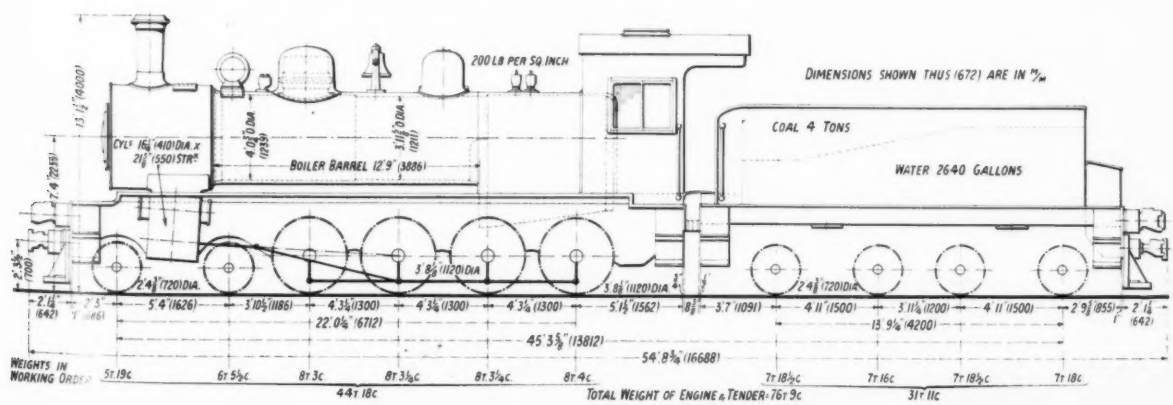
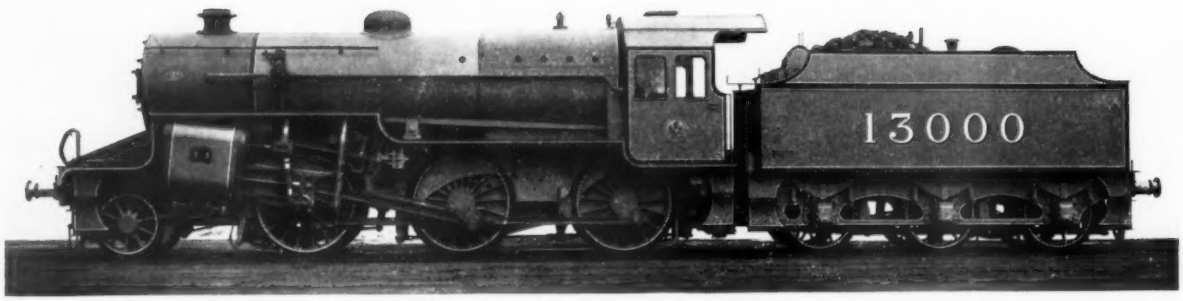
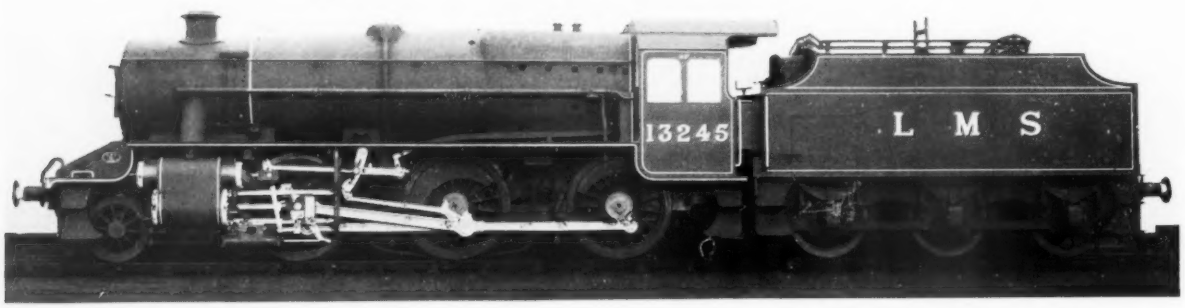



*Diagram of 4-8-0 mixed traffic locomotive, Hangchow-Kiangshan Railway*

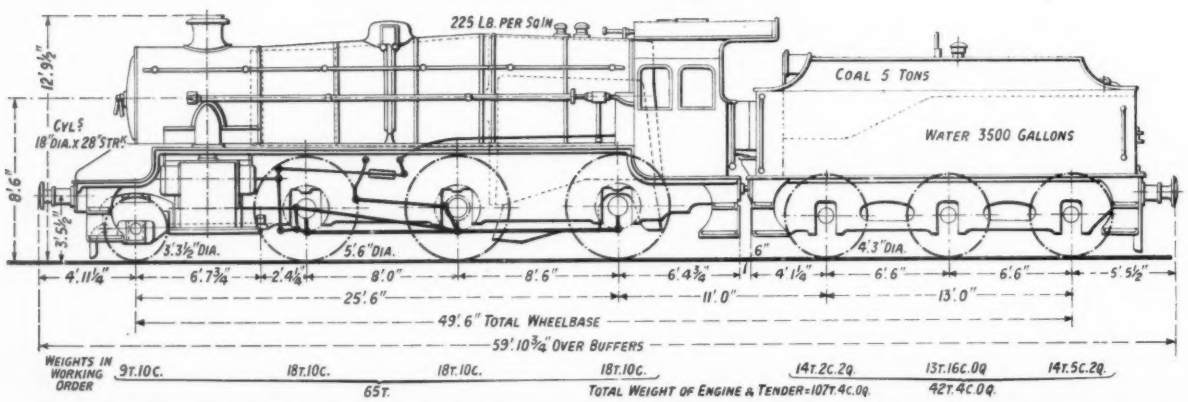



*Engine as originally built at Horwich works in 1926*

*Engine as fitted in 1932 with "R.C." poppet valves and gearing*




*One of the new Crewe-built 2-6-0 type engines (1933-4 series)*




2-6-0 TYPE MIXED TRAFFIC LOCOMOTIVES, LONDON MIDLAND & SCOTTISH RAILWAY

# NEW 2-6-0 MIXED TRAFFIC LOCOMOTIVES, L.M.S.R.

***These engines, some of which are already in service and others in course of construction at the Crewe works, have several modifications as compared with the previous engines with the same wheel arrangement***

FORTY new 2-6-0 type superheater two-cylinder locomotives are being built at the Crewe works of the London Midland & Scottish Railway to the designs of Mr. W. A. Stanier, the Chief Mechanical Engineer. These engines will be numbered 13245-13284 inclusive, and will be of the same general capacity as the 13,000 class, their immediate predecessors. Nos. 13245-54 will be allocated to the Northern Division, 13255-66 to the Midland Division, 13267-79 to the Western Division, and 13280-84 to the Central Division. Before briefly describing the new engines it may be of interest to refer to the earlier examples having the same general characteristics. The designs were originally worked out under the supervision of Mr. George Hughes, shortly before his retirement from the position of Chief Mechanical Engineer, at Horwich, where the first series of these engines was constructed. Others were built at the same works and at Crewe, the number placed in service hitherto being 245.

In 1932 five of the engines had their steam distribution system altered from piston valves to poppet valves, the gear being that known as the R.C. developed by Associated Locomotive Equipment Limited. In view of the interest attaching to the matter we have reproduced photographs of the original series and also one of those carrying the poppet valve gear equipment, in addition to a photograph and dimensioned drawing of Mr. Stanier's new engine, whilst the table of dimensions appended includes the leading particulars of both series.

The main particulars of each series are as follow:—

| | Earlier Series | New Series |
|---|---|---|
| Cylinders, diameter | 21 in. | 18 in. |
| ,, stroke | 26 in. | 28 in. |
| Wheels, coupled, diameter | 5 ft. 6 in. | 5 ft. 6 in. |
| ,, leading pony truck | 3 ft. 6½ in. | 3 ft. 3½ in. |
| Wheelbase, engine | 25 ft. 6 in. | 25 ft. 6 in. |
| ,, coupled | 16 ft. 6 in. | 16 ft. 6 in. |
| ,, total engine and tender | 48 ft. 11⅛ in. | 49 ft. 6 in. |
| Boiler, diameter | 5 ft. 2⅛ in. | 5 ft. 0 in. |
| | | 5 ft. 8⅜ in. |
| ,, length of barrel | 11 ft. 7⅝ in. | 11 ft. 10 1/16 in. |
| Heating surface, tubes | 1,361 sq. ft. | 1,256 sq. ft. |
| ,, firebox | 160 sq. ft. | 155 sq. ft. |
| Total | 1,521 sq. ft. | 1,411 sq. ft. |
| ,, superheater | 307 sq. ft. | 193 sq. ft. |
| Combined total | 1,828 sq. ft. | 1,604 sq. ft. |
| Grate area | 27·5 sq. ft. | 27·8 sq. ft. |
| Boiler working pressure | 180 lb./sq. in. | 225 lb./sq. in. |
| Tractive effort at 85 per cent. of boiler pressure | 25,580 lb. | 26,288 lb. |
| Weight of engine in working order | 66 tons | 65 tons |
| ,, tender ,, ,, | 42 tons 4 cwt. | 42 tons 4 cwt. |
| Total weight of engine and tender in working order | 108 tons 4 cwt. | 107 tons 4 cwt. |

Distinctive features of the new locomotives are the tapered form of domeless boiler barrel and the fact that the cylinders with superimposed steam chests are horizontal instead of inclined. The boiler pressure has been raised from 180 lb. to 225 lb. per sq. in., whilst the superheater has been proportioned to give a moderate degree of superheat and the main regulator has been incorporated in the superheater header in the smokebox. The feed water is supplied through top feed valves provided on the second boiler ring and is supplemented by water distributing trays. A steam manifold having a main shut off valve is provided on the top of the firebox back plate in the cab and on this are mounted the necessary valves for the ejector and steam brake, injectors, carriage warming apparatus, whistle and pressure gauge. Two Ross patent pop safety valves, each of 2½ in. diameter are fitted on the firebox, which latter has the standard type of sliding fire door. A Davies & Metcalfe exhaust steam injector with 10 mm. cones is fitted on the fireman's, that is to say, the right hand side, and on the other, *i.e.*, the driver's side, a Gresham & Craven live steam injector, also with 10 mm. cones is provided. Other boiler mountings, such as the water gauge frames and protectors, &c., are of the railway company's standard type.

### Cylinders and Motion

The two cylinders are of 18 in. diameter by 28 in. stroke as against 21 in. diameter by 26 in. stroke on the earlier engines, due to the use of the increased boiler pressure. The use of smaller diameter cylinders has allowed of their being placed horizontally without infringing the gauge clearance, whilst a more compact arrangement is secured, with, in addition, an improvement in the appearance. The piston valves and cylinders are provided with mechanical lubrication and steam atomisers to each point of delivery, and the piston rod packings, which are of the cast iron type, together with the valve spindle bushes, are mechanically lubricated, the lubricators being of the company's standard type. The last five engines of the series will, however, be fitted with hydrostatic lubricators with control valves applied to the cylinders alone. The coupling and connecting rods and motion are, in accordance with the latest practice, made of high tensile manganese-molybdenum steel, the connecting rods being of fluted section and the coupling rods of rectangular section.

The wheel centres are steel castings with the wheel rim of triangular section, and the tyre fixing is of the Gibson retaining ring type. The balance weights for the coupled wheels are built up of steel plates on both sides of the spokes and riveted, the requisite weight being provided by filling in between the plates with lead. The axleboxes for the coupled wheels are steel castings with pressed-in brasses having suitable white metal pockets and oil grooves provided on both sides of the crown to ensure a thorough distribution of the oil to the journal. The axlebox underkeep carries an efficient oil pad which can be examined by sliding out the keep whilst the axlebox is in position. The coupled wheels have each an independent mechanical oil feed to the crown of the bogie with the standard back pressure valve and flexible oil pipe connection. All the coupled, truck and tender springs are of carbon steel, plain section, with cotter fixing in the buckle on the engine springs only. The spring links are of the adjustable type on the engine and solid type on the tender. The two-wheeled truck is of the Bissel type having the anchor pin attached to a cross stretcher between the main frames 6 ft. 7¾ in. behind the truck wheel centre. The weight on

the truck is taken through side bolsters and the bogie side check spring gear has been carefully arranged to ensure smooth riding.

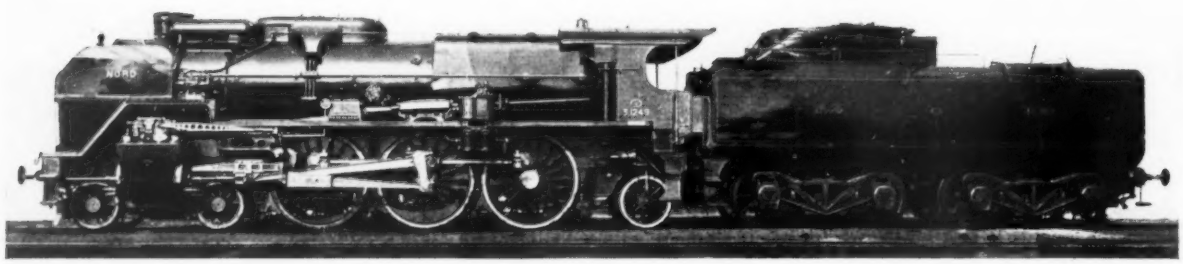
### Some General Particulars

The width over the cab plates is the standard one of 8 ft. 6 in. The driving position is on the left-hand side and all the controls are arranged for convenient handling, tip up seats being fitted for both the driver and the fireman. Two sliding windows on each side of the cab and a hinged window on the front cab plate provide an excellent lookout for the enginemen. A steam brake is fitted to the coupled wheels of the engine and on all the six tender wheels, these being controlled by the driver's vacuum brake valve. A vacuum pump is mounted on the left hand bottom slide bar and suitably driven from the crosshead. When standing the ejector maintains the vacuum on the engine and train. Steam sanding is applied to the front of the leading coupled wheels and front and back of the driving wheels. The standard carriage warming apparatus is included in the equipment.

A standard six wheeled tender is fitted to the engine, this having a water capacity of 3,500 gallons and a coal capacity of five tons. It is of the self-trimming type and fitted with water pick-up apparatus. The diameter of the wheels is 4 ft. 3 in. A hand brake is fitted to the tender wheels in addition to the steam brake referred to above.

## A CLEAR ENGINE CAB OUTLOOK

***Extensive trials on French railways with the Pottier cab outlook arrangement and aerodynamic draught excluder have demonstrated the efficacy of deflector plates in excluding wind and weather from cab outlook openings and carriage windows***



*Nord 4-6-2 express locomotive rebuilt as 2-cylinder simple with Cossart valves* and fitted with Pottier cab outlook*

THE advantages of direct vision at all times are secured in the Pottier cab outlook arrangement by the use of automatic aerodynamic screening instead of glass windows. As far as the driver is concerned, the outlook is through a plain opening, which, nevertheless, admits neither draught, rain, snow nor cinders. Attempts to obtain this result by a blast of air across the opening have failed because such a screen cannot be kept effective at all speeds and under all conditions. In the Pottier arrangement, however, as developed by the Société l'Aerodynamique Industrielle, the column of air tending to enter the opening is opposed by another column of air acting in the opposite direction. This opposing flow is derived from the incident air by means of deflector plates, and other plates are arranged to maintain reduced pressure in an evacuation channel which removes the whole of the air concerned, both incident and deflecting. Balanced air pressure is thus maintained outside and inside the opening, behind which the driver is therefore protected as completely as if glass were used.

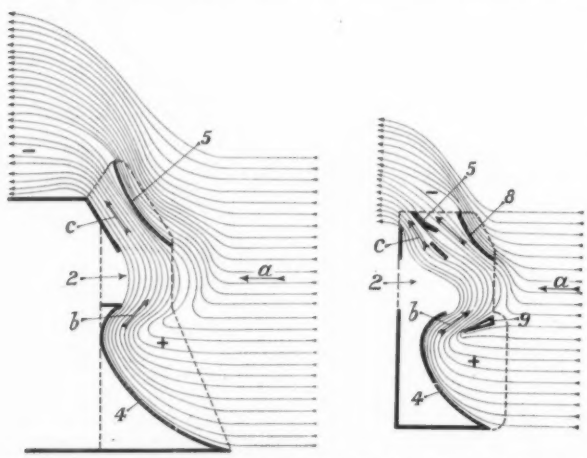






*Fig. 1 (left)—The principle of the Pottier direct-vision cab outlook with aerodynamic screening; Fig. 2 (right)—Improved arrangement of deflectors resulting in more powerful screening*

The form and arrangement of the deflector plates are necessarily different for each type of locomotive, but the principle is the same in all cases. The simplest possible arrangement is shown diagrammatically in Fig. 1. The direct flow of air *a*, which would ordinarily enter the opening *2*, is balanced and deflected by the current *b*, and withdrawn *via* the passage *c* behind the plate *5*. The flow of air over the outside of *5* effects a reduction of pressure at the rear of *c*, which acts in conjunction with the positive pressure in front of *4* to maintain the indicated conditions of flow. In this simple form, the apparatus requires the use of relatively large deflecting surfaces. The addition of supplementary deflecting surfaces as shown at

* See THE RAILWAY GAZETTE of March 17, 1933, page 383.

*8*, *9*, Fig. 2, diminishes the kinetic energy of the direct column of air, *a*, to be deflected; at the same time *9*, in conjunction with *4*, amplifies the effect of the opposing and deflecting column *b*. Finally, the plate *8* enables the cross section of the discharge passage to be increased while still maintaining the same value of depression. As thus arranged, the apparatus has a large margin of safety, ensuring its satisfactory operation under all conditions of direction and intensity of wind. There are no moving parts and the apparatus requires no attention or maintenance.

The accompanying illustrations show the equipment installed on a locomotive of the Northern Railway of France. Following upon successful trials of the new outlook arrangement on a number of locomotives of the Northern Railway, that company, the State and the Paris-Orleans

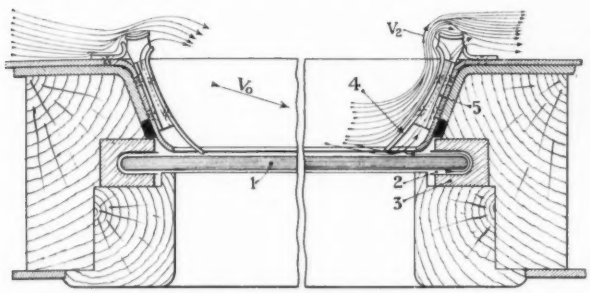



*Fig. 3—Carriage window protected against draughts and driven by aerodynamic deflection*

Railways have placed important orders for the equipment of further locomotives, and deflectors are under design for a P.L.M. Pacific. The drivers who have had experience with the apparatus speak highly of its performance under the most severe conditions, including running through a very heavy storm without any reduction of speed. Its universal adoption has been urged in connection with the Lagny disaster.

## Draught Exclusion

Precisely the same principles of aerodynamic deflection and pressure balance have been applied by M. Pottier to prevent the driving of air and water through the clearance

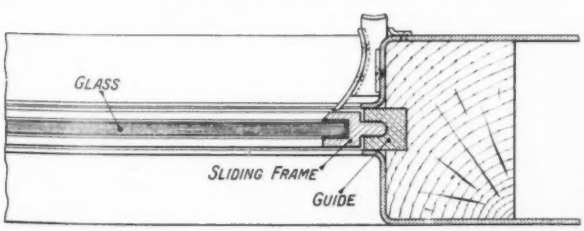



*Fig. 4—Aerodynamic deflectors applied to the window of an existing sleeping car*

spaces round the edges of carriage windows. His patents on this subject, as worked by the Société l'Aerodynamique Industrielle, are illustrated by Fig. 3 in relation to a window designed specially for this method of protection, and by Fig. 4 as regards the adaptation of the system to the window of an existing sleeping car. The essential feature is the diversion of the incident air in such a way as to establish zones of reduced air pressure drawing air, dust and water away from the clearance spaces through which they would otherwise be driven.

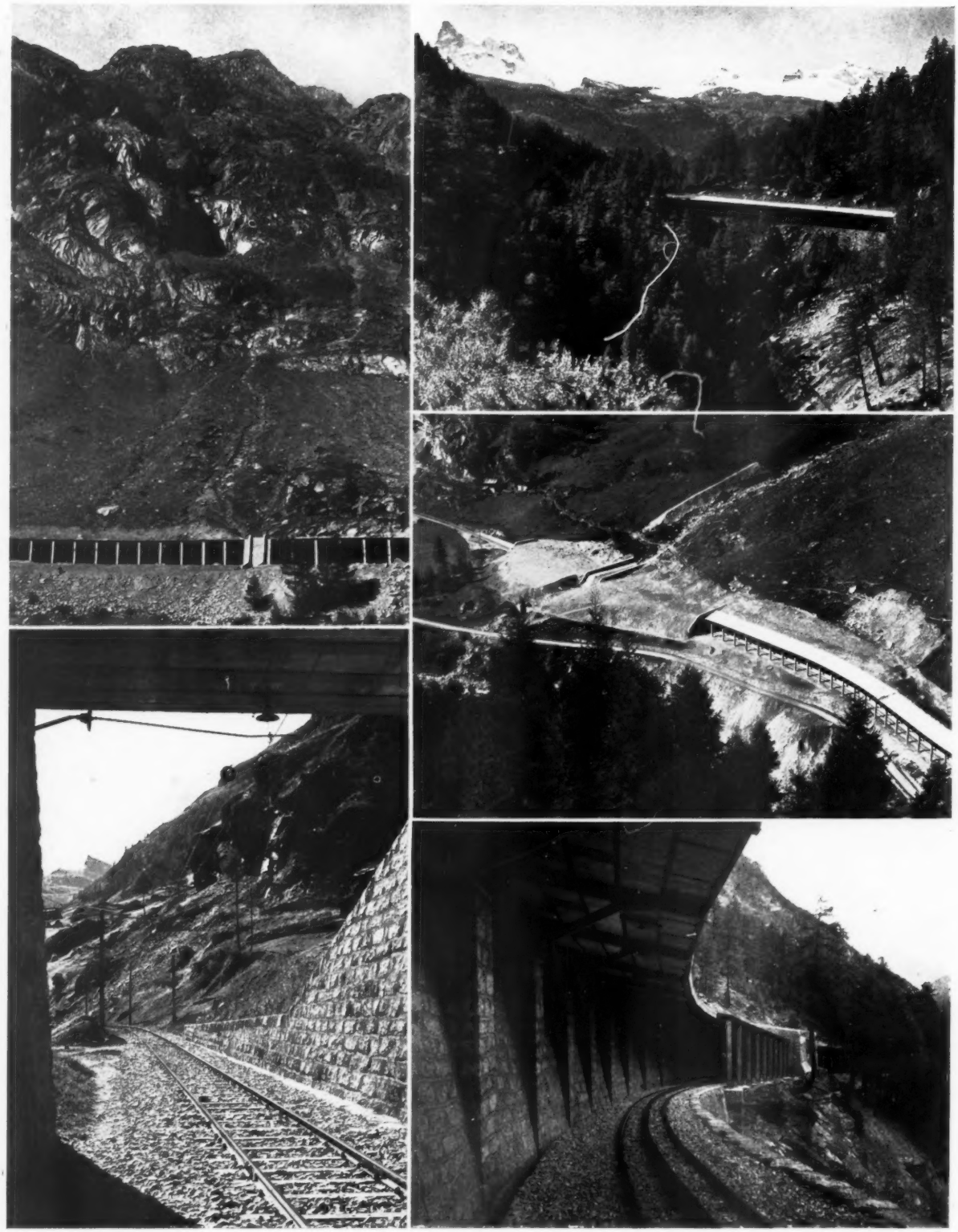
*Fig. 5—Nord Pacific locomotive with Pottier cab outlook*

Referring to Fig. 3, the incident air, having a velocity $V_0$ relative to the window, would ordinarily be driven through the clearance *2*, between the glass *1* and frame *3*, into the interior of the vehicle. Actually, however, the portion of the air deflected by the plate *4* flows over its outer edge with a velocity $V_2$ which effects a reduction of pressure between *4* and *5* resulting in an outward flow, along this passage, of air entering at the inner edge of *4*. At the same time, there is actually a small outward flow of air *via 2*, instead of a pronounced inward draught.

The precise form of the deflector and suction plates may be varied as required to suit the design of different windows. Trials conducted on coaches belonging to various French railways, among them the Eastern, State and Northern Railways, have given very satisfactory results. We comment on these ingenious devices on page 37.

*Fig. 6—Pottier cab outlook arrangement on Nord Pacific*

# Snow Protection in Switzerland



*A series of views taken on the Viége-Zermatt Railway in Switzerland, showing the recently-constructed avalanche sheds which enable the railway authorities to maintain an uninterrupted service throughout the winter months*

# RAILWAY NEWS SECTION

## PERSONAL

Monsieur Paul Emile Javary, who retired on December 31 from the position of Directeur de l'Exploitation (General Manager) of the Northern Railway of France, was born in Paris on March 31, 1866, and entered the Ecole Polytechnique in 1885, passing out two years later into le Corps des Ponts et Chaussées. After considerable experience there, he joined the French State Railways in 1894, and in 1897 was engaged by the Northern Railway. He quickly rose to be the right-hand man to Monsieur Albert Sartiaux, which position he was holding with the rank of Ingénieur-en-Chef de l'Administration Centrale when war broke out. He played a prominent part in adapting the railway to the contingencies of wartime, and when, in 1917, M. Sartiaux was obliged to retire owing to ill-health, M. Javary succeeded him as Ingénieur-en-Chef de l'Exploitation. As at that time two-thirds of the Northern system were in enemy hands, and the result of the battle being waged along the French front depended largely on railway support, this appointment was the highest tribute that could have been paid to M. Javary. His post-war activities have been characterised by the rapidity with which he rehabilitated the Nord, the encouragement of social work and ambitious plans for the future. In 1923 the Government honoured M. Javary with the title of Grand Officer of the Legion of Honour. In 1924 his designation was altered to Directeur de l'Exploitation, and he was President of the French General Managers' Conference in 1925. Lately he has been responsible for drawing up a scheme of co-ordination between road and rail. He has been decorated with the C.B.E. and with a number of French and other foreign orders.

*M. Paul Emile Javary, C.B.E.,*
Directeur de l'Exploitation (General Manager), Chemin de fer du Nord (France), 1924–33

*M. Robert Le Besnerais,*
Appointed Directeur de l'Exploitation (General Manager), Chemin de fer du Nord (France)

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Monsieur Robert Le Besnerais, who succeeded M. Javary as Directeur de l'Exploitation (General Manager) of the Northern Railway of France on January 1, was born on July 3, 1893. After attending the Ecole Polytechnique and the Ecole Supérieure des Mines, he became Mines Engineer at Nancy, joining the Northern Railway in 1924. Here he rose rapidly until he attained the rank of Ingénieur-en-Chef de l'Exploitation of that company, the post he now vacates to become Directeur. During the war M. Le Besnerais was an artillery officer, was awarded the Military Cross, and in 1929 became a Chevalier of the Legion of Honour. Since joining the Northern Railway his exceptional ability has enabled him to grasp railway matters and make his striking personality felt in a very short time. He has already stated his views on the major problems confronting the railway industry to widely attended conferences, particularly regarding the safety of passengers, and road and rail co-ordination. Practically - minded, and an unremitting worker, he obtained first-hand knowledge of railway practice in several countries, among them the United States. M. Le Besnerais is therefore particularly suited to carry on the work of his eminent predecessor. He is essentially

the right man in the right place, and we welcome his promotion with genuine satisfaction.

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RECENT L.M.S.R. APPOINTMENTS

The following appointments have been approved by the Directors:—

*Chief Commercial and Chief Operating Managers' Departments*

Mr. J. Harrison, Stationmaster, Southport, to be Stationmaster, Birmingham (New Street).

Mr. T. Lomath, Staff Inspector, Chief Commercial and Chief Operating Manager's Office, Manchester, to be Stationmaster, Southport.

*Chief Operating Manager's Department*

Mr. R. F. Harvey, District Locomotive Superintendent, Edge Hill, to be Assistant Divisional Superintendent of Motive Power, Manchester.

Mr. J. S. Elliott, District Locomotive Superintendent, Toton, to be District Locomotive Superintendent, Edge Hill.

Mr. R. T. Clews, District Locomotive Superintendent, Patricroft, to be District Locomotive Superintendent, Toton.

Mr. E. M. Ambler, District Locomotive Superintendent, Bescot, to be District Locomotive Superintendent, Preston.

Mr. W. E. Blakesley, District Locomotive Superintendent, Preston, to be District Locomotive Superintendent, Bescot (including Aston and Monument Lane).

Mr. J. C. Foster, Assistant to Superintendent of Motive Power, Derby, to be Assistant to Divisional Superintendent of Operation (Motive Power), Crewe.

Mr. J. Isherwood, Cartage Assistant, District Goods Manager's Office, Broad Street, to be Cartage Assistant, District Goods Manager's Office, Leeds.

Mr. E. Taylor, Chief Controller, Manchester, to be Assistant Divisional Controller, Manchester.

*Chief Commercial Manager's Department*

Mr. J. S. Carter, Passenger Agent, Preston, to be Passenger Agent, Manchester (Victoria, Exchange and Town Offices).

Mr. W. Ellis, Deputy Parcels Agent, Manchester, to be Passenger Agent, Preston.

*Chief Mechanical Engineer's Department*

Mr. F. G. Umpleby, Technical Assistant (Outdoor Machinery), Euston, to be Outdoor Machinery Assistant, Crewe.

*Solicitor's Department*

Mr. W. O. Hickson, Assistant Solicitor, Manchester, to be Divisional Solicitor, Manchester.

Mr. G. A. Challinor, Solicitor Assistant, Manchester, to be Assistant Solicitor, Manchester.

*Scottish Change*

Mr. J. Mackenzie, Foreman, Mechanical Engineer's Department, Grangemouth Docks, to be Resident Engineer, Grangemouth Docks.

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It is announced that Baron Lloyd of Dolobran, G.C.S.I., G.C.I.E., D.S.O., F.R.G.S., and Mr. H. Chapman, C.B.E., have been elected Directors of Rhodesia Railways Limited and of the Mashonaland Railway, with effect from January 1. Mr. Chapman becomes Resident Director in Africa of both companies, in addition to his present office of General Manager.

***Dr. Julius Dorpmüller.***

General Manager and Chairman, German State Railway Company, who has recently completed 40 years' railway service

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Sir Guy and the Hon. Lady Granet are expected back in England from their South African visit at the end of February.

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We regret to record the sudden death on December 27 of Captain R. H. Kilbee, Commodore of the Southern Railway cross-Channel fleet.

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It is with regret that we learn of the death, on December 23, of Mr. Frank Mansfield, a former Secretary of the Railway Clearing House, at the age of 86.

Dr. Julius Dorpmüller, General Manager of the German State Railway Company, who is also Chairman of the Board of that undertaking and General Manager of the new National Motor Roads Company, celebrated on December 7 the fortieth anniversary of his entering railway service. Among the numerous congratulatory messages he received on that occasion was one from President Hindenburg and another from Chancellor Hitler. Born at Elberfeld in 1869, Dr. Dorpmüller attended the Higher Schools of München-Gladbach and Aix-la-Chapelle and then studied engineering at the Technical High School in the latter city. In 1898 he joined the Saarbrücken Division of the Prussian State Railways, where he remained, latterly as Assistant Divisional Engineer, until in 1907 he was given permission to go to China. There he became Chief of the Operating Department of the Tsingtau division of the Shantung railway, and in March, 1908, joined the staff of the Imperial Chinese State Railways, Tientsin-Pukow Section, as Chief Engineer in charge of the building of a new line, 700 km. in length, in the northern area. When China came into the war in 1917, Dr. Dorpmüller succeeded in getting home safely via Manchuria and Russia and was given charge of some field railways in the Caucasus. He joined the Stettin Division of the Reichsbahn in 1919 and was later transferred to the newly-formed one at Oppeln, after the loss of Kattowitz. From 1922 to 1924 he was stationed at Essen and remained there throughout the trying time of the Ruhr occupation. In 1925 he was appointed Deputy General Manager of the Reichsbahn and took part in the London negotiations between the Powers, becoming General Manager in the following year.

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Mr. F. J. Wymer, Assistant to the Traffic Manager for Special Work, Southern Railway, who, as announced in THE RAILWAY GAZETTE of December 29, has been appointed Divisional Marine Manager for Dover and Folkestone, with effect from January 1, was educated at Merton Court School, Sidcup, and Eltham College, Mottingham. During the War he enlisted in the Royal Horse Artillery in 1916, subsequently being commissioned in the Royal Garrison Artillery and serving in France and Germany, 1917-19. He was Captain and Adjutant when demobilised. In 1920 Mr. Wymer joined the S.E. & C.R. as probationer, and was appointed to the Rolling Stock Section, Superintendent of the Line's Office, in 1923. In the following year he was transferred to the Trains Section

of the London (East) Division, and to the Chief Operating Superintendent's Department in 1928. It was in 1931 that he was appointed Assistant to the Traffic Manager for Special Work.

LONDON TRANSPORT APPOINTMENTS

Mr. J. Thornton, Superintendent of the Line, of the London Passenger Transport railways, retired on December 31 last on account of ill-health, and, in conjunction with his retirement, the following appointments have been made in the Department of the General Manager (Railways):—

General Superintendent: Mr. Evan Evans.

Divisional Superintendents: Mr. E. J. Yorke and Mr. Ernest Evans.

Indoor Superintendent: Mr. A. V. Larcombe.

In the Department of the Chief Electrical Engineer the following appointments have been made:—

Chief Electrical Engineer: Mr. J. H. Millen.

*Elliott* [*& Fry*

***Mr. F. J. Wymer.***

Appointed Divisional Marine Manager, Dover and Folkestone, Southern Railway

Electrical Engineer (Lots Road): Mr. A. L. Lunn.

Constructional Engineer (Lots Road): Mr. E. H. Cockshott.

Electrical Engineer (Neasden): Mr. P. R. Boulton.

Electrical Engineer (Greenwich): Mr. J. H. Parker.

Constructional Engineer (Greenwich): Mr. G. D. Meynell.

Mr. J. Thornton, who, as announced above, retired on account of ill-health from the position of Superintendent of the Line, London Transport railways, on December 31, started his railway career in the Goods Department of the old Caledonian system, afterwards serving in various grades with the North British Railway and the Glasgow District Subway. Later he came to London, joining the Great Central Railway and finally the Great Northern & City Railway before he eventually entered the service of the Metropolitan District Railway as Chief Inspector, which position he filled for 14 years. In 1919 Mr. Thornton was appointed Superintendent of the Line, Metropolitan District and associated railways, and continued in that position until the formation of the London Passenger Transport Board, when he remained as Superintendent of the Line of the Board's Railway Department.

***Mr. J. Thornton,***

Retired Superintendent of the Line, L.P.T.B.

Mr. J. H. Millen, who, as announced above, has been appointed Chief Electrical Engineer to the London Passenger Transport Board, served his apprenticeship with Latimer Clark, Muirhead & Co. Ltd. He then worked

*Elliott* [*& Fry*

***Mr. J. H. Millen,***

Appointed Chief Electrical Engineer, L.P.T.B.

for two years with Paterson & Cooper Limited, after which he joined the Dublin tramways. In 1903 he was appointed Chief Assistant during the building of Lots Road power house, and in 1916 became Assistant Superintendent of Power. In 1926 he was appointed Superintendent of Power to the Underground group, becoming Electrical Engineer to that group in 1930, the post he carried on under the L.P.T.B. until his present appointment as Chief Electrical Engineer for all the Board's undertakings.

Mr. E. J. Hornby has been appointed London Manager, Charles Roberts & Co. Ltd., rolling stock manufacturers and coach builders of Horbury Junction, near Wakefield, as from January 1. Mr. Hornby commenced his career as a premium apprentice in the G.W.R. Locomotive, Carriage and Wagon Department at Swindon works, and after passing through the drawing office was employed on the inspection of wagons and materials. In 1913 he joined the Design Branch of the Crown Agents for the Colonies. During the

***Mr. E. J. Hornby, M.C.,***

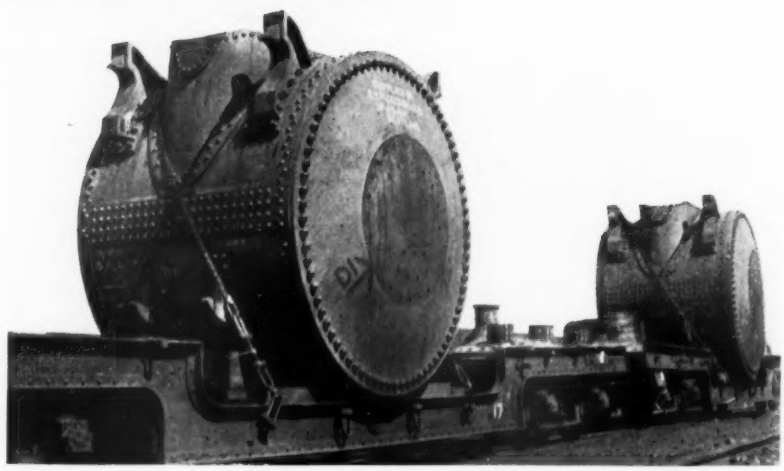
Appointed London Manager, Charles Roberts & Co. Ltd.

war he served in the Royal Engineers, and was commissioned through the Institution of Civil Engineers in September, 1914. After continuous service in France and Italy as O.C. Field Company R.E., Staff Officer, R.E. and Commanding Royal Engineer, he relinquished his Commission in October, 1920, being granted the rank of Lieutenant Colonel. He was awarded the Military Cross, the Order of the Crown of Italy, and was twice Mentioned in Despatches. At the end of 1920 Mr. Hornby returned to the Engineering Contracts Department, Crown Agents for the Colonies. In 1922 he was appointed Assistant London Manager of Cammell Laird & Company and acted in that capacity until 1929, which position he retained when part of the business of Cammell Laird & Company Limited was absorbed into the Metropolitan-Cammell Carriage, Wagon & Finance Co. Ltd.

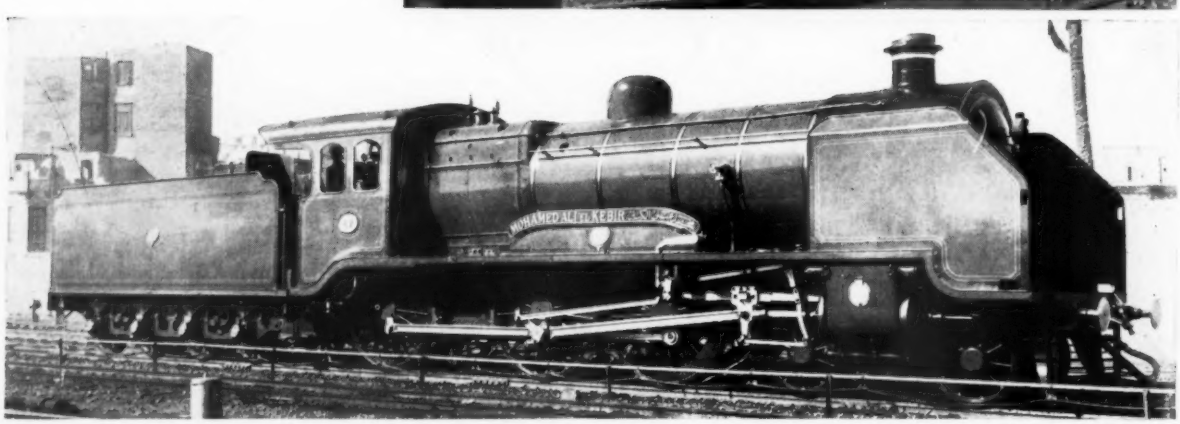
*Above: General view from the cliff top of the new L.M.S.R. station at Leigh-o n-Sea, which was formally inaugurated on Thursday of last week* (see opposite page)

*Left: Sir Josiah Stamp handing a ticket at the new Leigh-on-Sea station to the Mayor of Southend, who performed the opening ceremony*

*Right: An exceptional load, consisting of two 60-ton metal ladles with a height of 12 ft. 6 in. and a width of 8 ft. 2 in., being transported over the South African Railways from Port Natal to Pretoria, a distance of 514 miles*



*Below: One of the Egyptian State Railways 4-6-0 class locomotives converted from 4-4-2 and now named and known as the "Royal" class, as described in "The Railway Gazette" of July 21, 1933*



# L.M.S. Developments on the Southend Line

## Opening of New Station at Leigh-on-Sea

With the opening for traffic of the new passenger and goods station at Leigh-on-Sea, briefly recorded last week, the L.M.S. Railway has achieved a further stage in the big scheme of developments now being carried out on the London Tilbury and Southend section. These developments, by which railway facilities are being expanded to keep abreast of the rapid residential growth of the district served, cover the whole of the line from Fenchurch Street to Shoeburyness. The resultant improvements in facilities are being brought into operation with the completion of each individual scheme, in order to afford the maximum benefit to the public, but each scheme forms part of one comprehensive programme. The main features of this programme are as follow:—

Fenchurch Street station is now being remodelled, and when reconstruction is completed considerable augmentation of the services will be possible. This station is owned by the L.N.E.R., but is extensively used by the Southend and Tilbury trains of the L.M.S.

Barking and Upminster widening and electrification, brought into use during the autumn of 1932.

New station at Upminster Bridge, a contract for which has recently been placed.

Increased facilities at Laindon, including new down loop line and improved station buildings and goods yard arrangements.

Additional carriage sidings and improvements to the locomotive yard at Shoeburyness, including a new mechanical coaling plant which is now in operation.

New station at Southend East, brought into use in June, 1932.

The provision of more powerful locomotives.

The improvements at Leigh-on-Sea provided for the closing of the original passenger station, an old type of structure which, owing to its physical situation and other considerations, could not be suitably remodelled to cope with the growing traffic. It was therefore decided to provide two new stations in place of this one. A new passenger station has been provided a short distance on each side of the old Leigh station, thus doubling the passenger facilities of the immediate district, while the goods traffic is being concentrated in the commodious new depôt at the new Leigh-on-Sea station.

The first of the two new stations is named Chalkwell and is to the east of the old Leigh station. Chalkwell station was brought into use on September 11, 1933, and proved so popular that during the first week for which it was open for traffic over 12,500 passengers availed themselves of it, and this number has latterly considerably increased.

The second of the new stations is that at Leigh-on-Sea proper, a short distance on the west side of the original station. In addition to dealing with a considerable proportion of the traffic previously handled at the original station, it will cater for a rapidly growing residential district. The passenger station consists of two long covered platforms, access to which is by stairs from the commodious booking hall at road level on the bridge across the railway.

In laying out the goods yard it has been possible to effect a great improvement upon the freight traffic facilities formerly available at Leigh. An important advantage is that access to the goods yard is now by means of the new overbridge over the railway, instead of by level crossing, thus obviating delays to road vehicles entering and leaving the depôt. A further advantage is that the very steep gradient (about 1 in 9) which led from the old goods yard to the Broadway has been reduced, by the provision of the bridge and the construction of a new approach road, to only 1 in 20. For the convenience of people in the Old Town, an entrance to the station has been provided at railway level.

### The Opening Ceremony

The opening ceremony, which took place on Thursday, January 4, was timed for 12.30 p.m., and when a few minutes previously a special train from St. Pancras arrived at the new station hearty greetings were accorded Sir Josiah Stamp, Chairman and President of the Executive of the L.M.S.R. and a number of his officers by the assembled company, which included the Mayor of Southend (Councillor H. E. Frith) and other local dignitaries. After a brief exchange of courtesies the Mayor, at Sir Josiah Stamp's behest, formally and briefly declared the station open to traffic and at the same time expressed his thanks for the gift of a silver key which had been handed him as a memento of the occasion.

The united company then entered the special train and proceeded to Southend for luncheon at Garon's Banqueting Hall as guests of the L.M.S.R. Sir Josiah presided and among those present were:—

The Mayor (Councillor H. E. Frith), Alderman W. Miles, and a large number of Council Officers and other representatives of the Town. Mr. Frank Tatlow, formerly General Manager, Midland Railway; Mr. J. H. Follows, formerly Vice-President, L.M.S.R., Sir Frederick Senior, J.P., and many other representatives and traders of the Borough of Southend, and the following L.M.S.R. Officers: Mr. H. V. Mosley, Chief Executive Officer for New Works and Parliamentary Business; Mr. Ashton Davies, Chief Commercial Manager; Mr. C. R. Byrom, Chief Operating Manager; Mr. W. K. Wallace, Chief Civil Engineer; Mr. E. Wharton, Mineral Manager; Mr. T. W. Royle, Assistant Chief Commercial Manager; Mr. H. E. Horne, Assistant (Passenger) Commercial Manager; Mr. W. H. C. Clay, Land and Estate Agent; Mr. S. B. Carter, Outdoor Superintendent; Mr. E. D. Grasett, Divisional Superintendent of Operation, Derby; Mr. A. L. Castleman, District Goods Manager; Mr. G. H. Loftus Allen, Advertising and Publicity Officer.

The Mayor, in proposing the toast of "The London Midland & Scottish Railway," welcomed Sir Josiah Stamp to the borough and reminded his hearers that the new Leigh station which he (the Mayor) had had the honour to open, was one of 2,411 passenger stations owned by the L.M.S.R., and as it represented the completion of the local works and improvements, they wished the company every success. The railway company had for many years past pursued a forward policy in relation to passenger train travel, and they hoped that policy would continue to be extended to the London Tilbury and Southend section of the system. In congratulating Sir Josiah Stamp on the success which had attended the tour of the Royal Scot in the United States and Canada, the Mayor, in conclusion, expressed the hope that the company might see their way to exhibit that famous train for a few days in Southend.

Sir Josiah Stamp, in responding, said they were that day celebrating a definite stage in the very cordial relations between the Southend Corporation and the L.M.S.R. but it might interest them to know that that particular function would be justified quite apart from that occasion, for the reason that they had now completed 21 years of that association between the L.M.S. and Southend. He was urged to mention one of the authors of that association, namely, Mr. Frank Tatlow. So far as he himself was concerned, he could only say the question of Southend and what to do about it had been before him even since he had been Chairman, and what looked like a difficult problem had, by patience and goodwill, been brought to the present stage of successful achievement. They had had long negotiations which culminated in the Act of 1929, which set out a comprehensive scheme with five years for its fulfilment. He was glad to say that, despite some modifications of it, they would have completed all the essential parts of that scheme within the specified time. The modifications would involve substantial changes at Fenchurch Street, and they were well within sight of fulfilment. It had been no mean scheme—it involved no less a sum than £800,000 of expenditure without any regard to any expenditure on more powerful locomotives and more comfortable rolling stock, and what also affected Southend people, the extension of the electric line to Upminster, which relieved the pressure of the service, and the widening costs which came to over half a million. If they added these together they got a scheme of considerable dimensions, and the company was very glad it had been brought to its present stage. With regard to the Royal Scot, Sir Josiah Stamp said he would be delighted, when she had completed her present undertakings, say, at the end of the month, for her to spend two or three days in Southend—"complete with her bell and head lamp and minus her cowcatcher."

Subsequently, Sir Josiah Stamp on behalf of his company presented an inscribed silver salver to Alderman William Miles, O.B.E., J.P., who had been Chairman of the Law and Parliamentary Committee of the Borough

of Southend for 12 out of the 21 years aforesaid. The presentation was made in connection with the toast of "The County Borough of Southend" which was proposed by the Chairman and responded to by Alderman Miles, who declared that the opening of the station that day was an excellent exemplification of what was possible of attainment if two parties desiring the same end got together in a spirit of goodwill and mutual understanding, each recognising the aspirations of the other and not attempting to minimise the difficulties. The Alderman remarked on the presence of Mr. J. H. Follows and declared, amid applause, that it was due to that gentleman's lifelong knowledge of railway working and management that the scheme was ever evolved. He also paid a warm tribute to the assistance they had received from Mr. Mosley, who had been present at all their interviews at Euston.

The last toast, that of "The London Midland & Scottish Railway," was proposed by Mr. Joseph Francis. He said he could go back to the days when he and Mr. Tatlow were together in the committee rooms. They co-operated together and he was sure Mr. Tatlow, like himself, was delighted to feel they had both been spared to see most of the improvements then referred to carried out. This was briefly but warmly acknowledged by the Chairman.

## Calendars and Diaries

We acknowledge receipt of calendars and diaries for 1934 from the following:—

The Associated British Machine Tool Makers Limited; British Insulated Cables Limited, Prescot; S. J. Claye Limited, Long Eaton; Craven Brothers Limited, Manchester; Dexine Limited, London; J. Halden & Co. Ltd., London; Flowerdew & Co. Ltd., London; the German State Railway; Harrison & Sons Ltd., London; Alfred Herbert Limited, Coventry; Japanese Ministry of Railways; London Transport; Nederlandsche Spoorwegen; the Nigerian Railway; Peckett & Sons Ltd., Bristol; *The Railway Review*; the Railway Passengers Assurance Company, London; Ransome & Marles Bearing Co. Ltd., Newark-on-Trent; Ransomes & Rapier Limited, Ipswich; Thomas Robinson & Son Ltd., the Scottish Motor Traction Co. Ltd., Edinburgh; the Skefko Ball Bearing Co. Ltd., London; H. J. Skelton & Co. Ltd., London; and G. R. Turner Limited, Langley Mills.

**London Transport Acquisition.**—On Wednesday, January 10, the London Passenger Transport Board took over the operations within the London Transport Area of Edward Hillman's Saloon Coaches, Ltd. The transfer included the Bow—Romford and Bow—Brentwood services; the Aldgate—Upminster route of the associated company, Upminster Services, Ltd.; about 65 vehicles and a staff of 300.

## Funeral of Viscount Churchill

The funeral service of the late Viscount Churchill, for 25 years Chairman of the Great Western Railway Company, was held at St. James's Church, Sussex Gardens, Paddington, at 11 a.m. last Saturday morning. The interment took place at Finstock, Charlbury, near Oxford, in the afternoon.

The Archdeacon of London, assisted by the Rev. Percy Gordon, Vicar of St. James's, conducted the service. The order of the service was:—Voluntary (Beethoven); Hymn (Lead, kindly Light); Lesson (1 Cor. xv. 20); Psalm 121; The Prayers; Hymn (For all the saints); The Blessing. The Nunc Dimittis was sung at the conclusion of the service, followed by Chopin's Funeral March.

The congregation, which totalled some 1,500, was representative of Lord Churchill's various activities in the railway, business, and social world. It also included representatives of various grades of the uniform staff of the Great Western Railway.

The King was represented by the Hon. Sir Derek Keppel and the Duke of Connaught by Major Hubert Fyers.

Members of the family and others who attended the service included:—Viscountess Churchill, Major the Hon. Victor Spencer (son), Mr. and Mrs. W. J. Sinclair, Mr. D. F. Sinclair, and Miss M. Butcher; The Brazilian Ambassador, the Polish Ambassador, the French Ambassador, the Swiss Minister, the Duke of Marlborough, the Earl of Dunmore, V.C., Sir Samuel Scott, Sir John Withers (representing Mr. Stanley Baldwin), Sir Cecil Lowther (representing the Earl of Lonsdale), the Mayor of Kensington, the Mayor of Paddington, the Marquess of Camden, Mr. Winston Churchill. A full list of these was published in *The Times* of Monday last.

Amongst those present representing railway interests were the following:—Sir Josiah Stamp, Chairman, L.M.S.R.; Mr. William Whitelaw Chairman, L.N.E.R.; Mr. Gerald Loder, Chairman, S.R.; Sir Herbert Walker, General, Manager, S.R.; Sir Ralph Wedgwood, Chief General Manager, L.N.E.R.; Sir James Milne, General Manager, G.W.R.; Mr. W. V. Wood, Vice-President, L.M.S.R.; Mr. G. Cole Deacon, Secretary, Railway Companies' Association; Lord Faringdon, Deputy Chairman, L.N.E.R.; Sir Cecil Partridge; Mr. A. W. Air, also representing Lord Plender; Mr. Charles Sheath, Director, S.R.; Mr. W. H. Curtis (Chairman, Grand Union Canal); Mr. Edward Shortt, K.C.; Mr. W. A. Stanier, Chief Mechanical Engineer, L.M.S.R.; Mr. R. H. Nicholls, late Superintendent of the Line, G.W.R.; Mr. E. Ford, late Chief Goods Manager, G.W.R. Mr. Francis Roxburgh; Mr. G. E. Rawdon Smith (London Passenger Transport Board), also representing Lord Ashfield; Mr. J. R. Stephenson Clarke (Stephenson Clarke and Associated Companies Ltd.); Mr. F. H. Willis, Secretary, S.R.; Mr. John C. Mitchell, Secretary former Underground Companies; Sir Charles Morgan, Director, S.R.; Mr. James McLaren, Secretary, L.N.E.R.; Sir Thomas Williams, Director, L.M.S.R.; Mr. Montague Evans (also representing Lloyd's Underwriters); Mr. Charles Dent; M. J. A. Kay, Editor, THE RAILWAY GAZETTE; Mr. W. R. Stevens (also representing Mr. W. J. Stevens); Mr. A. W. Arthurton, representing the Railway Companies' Association; Mr. H. Haigh (Railway Convalescent Homes).

Directors of the G.W.R. attending included:—Lord Palmer, Deputy Chairman; The Hon. J. J. Astor, M.P.; The Earl of Dunraven; The Earl of Mount Edgcumbe; The Hon. E. C. G. Cadogan; Lt.-Col. Sir Wyndham R. Portal; Sir Wm. Thomas; Sir Henry Robertson; Mr. Cyril Lloyd; Mr. G. F. Luttrell. The following directors (who were abroad or otherwise unable to attend) were represented at the service: Sir Percy Bates, Mr. Laurence Currie, Mr. Harold Macmillan, M.P., Sir Robert Horne, Lord Dulverton, Lord Mildmay of Flete, Lord Davies, Sir Henry Mather Jackson, Sir Watkin Williams-Wynn, Sir Watkin Wynn, and Mr. Charles Hambro.

G.W.R. officers and members of the staff present included: Mr. R. Cope, Chief Accountant; Mr. F. R. E. Davis, Secretary; Mr. A. G. Hubbard, Solicitor; Mr. C. B. Collett, Chief Mechanical Engineer; Mr. R. Carpmael, Chief Engineer; Mr. A. S. Quartermaine, Assistant Chief Engineer; Mr. P. E. Culverhouse, Architect to the Company; Mr. H. L. Wilkinson, Superintendent of the Line; Mr. C. S. Page, Chief Docks Manager; Mr. A. Maynard, Chief Goods Manager; Mr. C. M. Jacobs, Signal Engineer; Mr. F. W. Showers, Surveyor and Estate Agent; Mr. A. C. Cookson, Chief Stores Superintendent; Mr. H. Hoskins, Parliamentary Agent; Dr. Cavendish Fuller, Chief Medical Officer; Mr. J. F. Lean, Principal Assistant to General Manager; Mr. H. Wheeler, Assistant to General Manager; Mr. S. B. Collett, Assistant Secretary; Mr. C. H. Whitelegge, Solicitor's Department; Mr. K. W. C. Grand, Commercial Assistant to Superintendent of the Line; Mr. G. Matthews, Assistant to Superintendent of the Line; Mr. G. E. Orton, Publicity Agent; Mr. F. G. Wainwright, Divisional Superintendent, Cardiff; Mr. G. J. Walker, Hotels, Refreshment Rooms and Restaurant Car Departments Manager; Mr. E. S. Hadley, Editor, *Great Western Railway Magazine*; Mr. C. Bassage; Mr. F. W. Lampitt; Mr. J. H. Matthews, Chief of Police; Mr. G. Stephens, Assistant Chief of Police; Mr. D. V. Levien, Secretary, L.M.S. and G.W. Joint Committee; Mr. T. B. Cox; Mr. A. G. Pollard; Mr. J. L. Edwards; Mr. R. C. Y. Kirkpatrick; Mr. C. Furber; and many others.

A special train left Paddington at 12.10 drawn by the locomotive *The Viscount Churchill*. A number of members of the uniform staff and inspectors lined the platform on the departure of the train.

The funeral of Lord Churchill took place on Saturday afternoon at Finstock, Oxfordshire, the former seat of the family (Cornbury Park, Finstock). The service in the village church was conducted by the Rev. S. G. Wade. The family mourners included: Captain Tod and the Hon. Mrs. Tod (son-in-law and daughter), Captain and the Hon. Mrs. Brassey (son-in-law and daughter), Sir Leonard Brassey, and Mr. Sinclair and Mr. W. J. Sinclair (brothers-in-law).

In addition to family mourners, those present at the interment included: The Earl of Mount Edgcumbe, the Earl of Inchcape (representing the P. & O. Company), Lord Palmer (Deputy Chairman of the G.W.R.), Lord Glanely (Director of the G.W.R.), Sir John Withers (representing Mr. Stanley Baldwin), Sir William James Thomas (Director of the G.W.R.), Mr Cyril Lloyd (Director of the G.W.R.), Sir James Milne (General Manager of the G.W.R.), Mr. F. R. E. Davis (Secretary of the G.W.R.) Mr. S. B. Collett (Assistant Secretary of the G.W.R.), Mr. A. G. Hubbard (Solicitor to the G.W.R.), Dr. Cavendish Fuller (Chief Medical Officer, G.W.R.), Mr. P. E. Culverhouse (Architect, G.W.R.), Mr. H. L. Wilkinson (Superintendent of the Line), Mr. F. R. Potter (Principal Assistant to Superintendent of the Line), Mr. A. Burden, Sir Wyndham Portal, Sir Gordon Carter, Sir Theodore Brinckman, Mr. Nigel Campbell, Mr. L. Bygrave, Sir Henry Robertson, Mr. H. Duckworth, Mr. C. K. Tatham, Mr. and Mrs. Michael Mason, Colonel J. H. Waller, Mr. A. E. Thorne, Mr. J. A. Kay (Editor of THE RAILWAY GAZETTE), and Mr. H. J. Peacock (Divisional Superintendent, Worcester).

# The Royal Scot in America

Last Monday a film of the American tour of the Royal Scot was shown at a meeting of the Institute of Transport, and preceded by a short descriptive lecture delivered by Mr. C. O. D. Anderson, who had been in charge of the train throughout. Mr. E. J. H. Lemon was to have given the lecture, but was unable to attend. Mr. William Whitelaw presided. The lecturer outlined the history of the enterprise from the promise made a year or two ago by Sir Josiah Stamp to Mr. Rufus Dawes to send the Royal Scot to the Century of Progress Exhibition at Chicago, to the actual shipping of the famous train at Tilbury, its two tours on the railways of Canada and the U.S.A., in which 11,700 miles were covered, and its exhibition at Chicago.

We have already described these exploits in previous issues, and commented upon their unqualified success. In view of certain comments made after Mr. Anderson's lecture and the showing of the film, we give below a table showing the tare weight and the accommodation of the Royal Scot as sent to America, and corresponding figures for an American train of approximately similar accommodation.

It must be borne in mind, however, that the Royal Scot exhibition train was not typical of the Royal Scot as running in this country and contained an excess of first-class accommodation. Nor is the American train cited typical, but is the nearest approach for comparative purposes to the Royal Scot exhibition train. The weights are approximate only, and the third-class compartments of the Royal Scot are taken as seating six each and the first class four. Such accommodation is somewhat more lavish than that on most other expresses in this country, where the third-class compartments seat eight and the first class six. Compartments of the British type are comparatively rare in America, and when provided are usually limited to two or three to a car, the remainder of the car comprising ordinary sections and one or two drawing rooms with three sleeping berths each. A standard section consists of one upper and one lower berth arranged longitudinally, and in the largest cars, where there are neither compartments nor drawing rooms, there are eight sections on each side. Tourist sleepers run only in the West, but they are included in the comparisons in order to give the nearest equivalent possible to a British third class sleeper. Day coach and tourist sleeping accommodation have been taken as equivalent to third class, and the remaining accommodation as first class for comparative purposes. In the American case one-third of the dining accommodation has been included in the first class seat total and the remaining two-thirds in the third class total. The American Pullman sleeper is regarded as a car with single-berth sections only in order to give the nearest possible equivalent to a first class sleeping car. Editorial comment is on page 37.

| | Tare Weight Long Tons (of 2,240 lb.) | Seats or Berths Number |
|---|---|---|
| *Royal Scot*— | | |
| Third-class corridor brake | 29 | 30 |
| Third-class vestibule ... | 29 | 42 |
| Electric kitchen car ... | 44 | — |
| First-class corridor vestibule | 29 | 30 |
| First-class lounge brake ... | 29 | 12 |
| Third-class sleeping car ... | 29 | 28 |
| First-class sleeping car ... | 45 | 12 |
| First-class corridor brake ... | 29 | 16 |
| Tare ... ... ... | 263 | to seat 170* |
| *American Train*— | | |
| Baggage car ... ... | 65 | — |
| Mail and express car ... | 65 | — |
| Tourist sleeper ... ... | 70 | 32 |
| Day coach ... ... ... | 70 | 80 |
| Dining car ... ... ... | 80 | 36 |
| Pullman sleeper ... ... | 75 | 16 |
| Pullman chair car ... ... | 70 | 28 |
| Tare ... ... ... | 495 | to seat 192† |

* 70 first class and 100 third class.
† 56 first class and 136 third class.

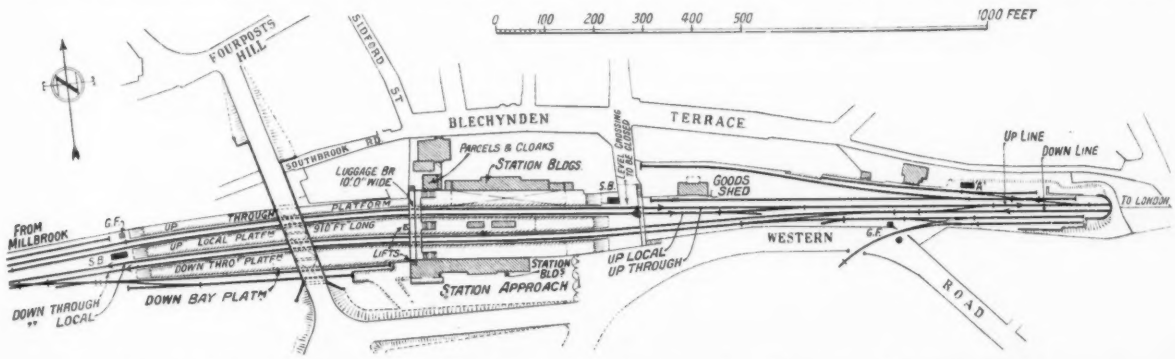
# New Station for Southampton, Southern Railway

The passenger traffic using or passing through Southampton West station has enormously increased during the last decade, mainly due to two causes. In the first place the rapid and continued growth of Southampton Docks has brought about a large increase in the population and business of Southampton. Secondly, the traffic to Bournemouth and the neighbouring district of Poole has also increased. In order to deal with these factors and with the further development of the docks in mind, the Southern Railway has begun re-construction of Southampton West station at an estimated cost of £177,900. The station will be remodelled to provide four platform lines each for through trains, together with a bay road on the down side, as indicated on our plan.

The existing down platform will be reconstructed as an island platform to serve the up and down local trains, and a new platform will be built on the down side. New station buildings will be constructed on the down side and will include a booking hall 36 ft. by 30 ft. and a parcels office with covered loading docks for both fish and general merchandise with access in the form of a van yard 120 ft. by 60 ft. Waiting room and refreshment and tea room accommodation on the most modern lines will be provided.

The island and down platforms will be roofed for 530 ft. and 600 ft. of their length respectively. The roof on the existing up platform will be lengthened to 550 ft. The buildings on the down side, together with the roofing and footbridge, will be of concrete, the whole being planned as an architectural unit.

An integral part of the scheme is the abolition of the present level crossing and the construction of a new road running from Fourposts Hill, north of the station, and spanning the railway by a reinforced-concrete bridge at the western end of the station. After crossing the railway, one branch of the road will curve eastwards behind the down side station buildings to join up with Western Road and will afford access to the new station cab yard which, with its area of 300 ft. by 65 ft.,




*Layout of Southampton West station, Southern Railway, as it will appear after reconstruction*

will afford ample accommodation for road vehicles of all kinds. Another branch will be carried southwards, and give direct communication with the land which the Corporation propose to develop forming part of the very large area of land in process of reclamation which, until recently, was part of the estuary of the River Test. The nature of the sub-soil renders it necessary to carry the whole of the new platforms, buildings and foot-bridge on concrete piles, which will number between four and five hundred.

The first stage of the work includes the completion of the new road bridge, already well in hand, and the abolition of the existing level crossing. It also includes the construction of the new down island platform and the new station buildings thereon. This will provide an additional down road. The new parcels office on the down side will be constructed, and until the whole scheme is completed will be used as a combined parcels and booking office. Work upon the new passenger foot-bridge connecting the different platforms has already started and it is anticipated that the first stage will be completed and the additional down line opened for traffic by July, 1934.

HIGHER SPEEDS IN ITALY.—Major Stormont, Manager of the London Office of the Italian State Tourist Department, advises us that experiments are now being made in Italy to raise speed limits wherever circumstances permit this to be done, with the object of accelerating train schedules from time to time. In a trial run on the new direct line between Bologna and Florence a maximum speed of 140 km.p.h. (87 m.p.h.) was reached, and an average of 120 km p.h. (75 m.p.h.) maintained. This line is electrified on the 3,000-volt d.c. system. The new international timetables of next May will show the advantage of these improvements, and are referred to editorially on page 36.

## British and Irish Railway Traffic Returns

| GREAT BRITAIN | Totals for 1st Week | | | Totals to Date | | |
|---|---|---|---|---|---|---|
| | 1934 | 1933 | Inc. or Dec. | 1934 | 1933 | Inc. or Dec. |
| | £ | £ | £ | £ | £ | £ |
| L.M.S.R. (6,941 mls.) | | | | | | |
| Passenger-train traffic ... | 344,000 | 345,000 | – 1,000 | 344,000 | 345,000 | – 1,000 |
| Merchandise, &c. ... | 377,000 | 339,000 | + 38,000 | 377,000 | 339,000 | + 38,000 |
| Coal and coke ... | 243,000 | 216,000 | + 27,000 | 243,000 | 216,000 | + 27,000 |
| Goods-train traffic ... | 620,000 | 555,000 | + 65,000 | 620,000 | 555,000 | + 65,000 |
| Total receipts ... ... | 964,000 | 900,000 | + 64,000 | 964,000 | 900,000 | + 64,000 |
| L.N.E.R. (6,339 mls.) | | | | | | |
| Passenger-train traffic ... | 238,000 | 235,000 | + 3,000 | 238,000 | 235,000 | + 3,000 |
| Merchandise, &c. ... | 256,000 | 232,000 | + 24,000 | 256,000 | 232,000 | + 24,000 |
| Coal and coke ... | 203,000 | 187,000 | + 16,000 | 203,000 | 187,000 | + 16,000 |
| Goods-train traffic ... | 459,000 | 419,000 | + 40,000 | 459,000 | 419,000 | + 40,000 |
| Total receipts ... ... | 697,000 | 654,000 | + 43,000 | 697,000 | 654,000 | + 43,000 |
| G.W.R. (3,753 mls.) | | | | | | |
| Passenger-train traffic ... | 156,000 | 161,000 | – 5,000 | 156,000 | 161,000 | – 5,000 |
| Merchandise, &c. ... | 162,000 | 140,000 | + 22,000 | 162,000 | 140,000 | + 22,000 |
| Coal and coke ... | 110,000 | 107,000 | + 3,000 | 110,000 | 107,000 | + 3,000 |
| Goods-train traffic ... | 272,000 | 247,000 | + 25,000 | 272,000 | 247,000 | + 25,000 |
| Total receipts ... ... | 428,000 | 408,000 | + 20,000 | 428,000 | 408,000 | + 20,000 |
| S.R. (2,181 mls.) | | | | | | |
| Passenger-train traffic ... | 228,000 | 233,000 | – 5,000 | 228,000 | 233,000 | – 5,000 |
| Merchandise, &c. ... | 46,500 | 46,000 | + 500 | 46,500 | 46,000 | + 500 |
| Coal and coke ... | 28,500 | 28,000 | + 500 | 28,500 | 28,000 | + 500 |
| Goods-train traffic ... | 75,000 | 74,000 | + 1,000 | 75,000 | 74,000 | + 1,000 |
| Total receipts ... ... | 303,000 | 307,000 | – 4,000 | 303,000 | 307,000 | – 4,000 |
| Liverpool Overhead (6¼ mls.) ... | 1,096 | 1,076 | + 20 | 1,096 | 1,076 | + 20 |
| Mersey (4½ mls.) ... | 4,735 | 4,465 | + 270 | 4,735 | 4,465 | + 270 |
| *London Passenger Transport Board ... | 507,600 | — | — | 13,375,800 | — | — |
| IRELAND | | | | | | |
| Belfast & Co. Dn. pass. (80 mls.) | 2,275 | 2,262 | + 13 | 2,275 | 2,262 | + 13 |
| " " goods | 653 | 523 | + 130 | 653 | 523 | + 130 |
| " " total | 2,928 | 2,785 | + 143 | 2,928 | 2,785 | + 143 |
| Great Northern pass. (562 mls.) | 8,400 | 9,400 | – 1,000 | 8,400 | 9,400 | – 1,000 |
| " " goods | 6,600 | 6,850 | – 250 | 6,600 | 6,850 | – 250 |
| " " total | 15,000 | 16,250 | – 1,250 | 15,000 | 16,250 | – 1,250 |
| Great Southern pass. (2,158 mls.) | 19,168 | 19,259 | – 91 | 19,168 | 19,259 | – 91 |
| " " goods | 26,500 | 28,775 | – 2,275 | 26,500 | 28,775 | – 2,275 |
| " " total | 45,668 | 48,034 | – 2,366 | 45,668 | 48,034 | – 2,366 |

* 27th week.

## British and Irish Railway Stocks and Shares

| Stocks | Highest 1933 | Lowest 1933 | Prices Jan. 10 1934 | Prices Rise/Fall |
|---|---|---|---|---|
| G.W.R. | | | | |
| Cons. Ord. ... | 55½ | 31 | 56 | +1½ |
| 5% Con. Prefce. ... | 109¾ | 69½ | 112 | +1 |
| 5% Red.Pref.(1950) | 109¼ | 87½ | 109 | — |
| 4% Deb. ... ... | 108 15/16 | 99¼ | 108½* | — |
| 4¼% Deb.... ... | 108 | 100¾ | 110½* | –1 |
| 4½% Deb.... ... | 116 | 106 | 116½* | — |
| 5% Deb. ... ... | 128 | 117¼ | 128½* | –1 |
| 2½% Deb.... ... | 65 | 60 | 63½* | –1 |
| 5% Rt. Charge ... | 124 | 111½ | 124½* | –1 |
| 5% Cons. Guar. ... | 122 | 103 | 123½ | +1 |
| L.M.S.R. | | | | |
| Ord. ... ... | 29⅞ | 12⅛ | 26 | +⅛ |
| 4% Prefce. (1923) | 51 | 17 | 47½ | +2 |
| 4% Prefce. ... | 72 | 33¼ | 71½ | +1 |
| 5% Red. Prf. (1955) | 93 | 47¼ | 93½ | +1 |
| 4% Deb. ... ... | 103¼ | 89½ | 104 | –1 |
| 5% Red.Deb.(1952) | 114 | 105 | 111½ | — |
| 4% Guar. ... ... | 97¼ | 68⅝ | 98½ | +⅛ |
| L.N.E.R. | | | | |
| 5% Pref. Ord. ... | 22½ | 7¾ | 21 | — |
| Def. Ord. ... ... | 10¾ | 4⅛ | 10 | +⅛ |
| 4% First Prefce. ... | 65½ | 19⅝ | 64½ | — |
| 4% Second Prefce. | 40½ | 12¼ | 38 | –½ |
| 5% Red.Pref.(1955) | 83¾ | 27 | 82½ | — |
| 4% First Guar. ... | 94¾ | 58¼ | 96½ | +½ |
| 4% Second Guar. | 89¼ | 48 | 90 | — |
| 3% Deb. ... ... | 77 | 60¼ | 78 | — |
| 4% Deb. ... ... | 102¾ | 80 | 103½ | –½ |
| 5% Red.Deb.(1947) | 112 | 102½ | 111 | — |
| 4½% Sinking Fund Red. Deb. | 107½ | 98¾ | 106½ | — |
| SOUTHERN | | | | |
| Pref. Ord.... ... | 71 | 27¾ | 65 | +1 |
| Def. Ord. ... ... | 24⅝ | 9⅜ | 20 | — |
| 5% Prefce. ... | 107 11/16 | 74 | 109 | — |
| 5% Red.Pref.(1964) | 107¾ | 78⅞ | 110 | +1 |
| 5% Guar. Prefce. | 124¼ | 102¾ | 121½ | — |
| 5% Red.Guar.Pref. (1957) | 115⅝ | 103½ | 115½ | — |
| 4% Deb. ... ... | 107½ | 96¾ | 107 | — |
| 5% Deb. ... ... | 126½ | 114¼ | 127½ | +1 |
| 4% Red. Deb. 1962–67 | 107¼ | 100 | 106½ | — |
| BELFAST & C.D. | | | | |
| Ord. ... ... | 6 | 4 | 6 | — |
| FORTH BRIDGE | | | | |
| 4% Deb. ... ... | 99½ | 95½ | 99½* | –1 |
| 4% Guar. ... | 98½ | 94 | 99½* | –1 |
| G. NORTHERN (IRELAND) | | | | |
| Ord. ... ... | 7½ | 3½ | 5 | — |
| G. SOUTHERN (IRELAND) | | | | |
| Ord. ... ... | 28 | 16 | 25 | — |
| Prefce. ... ... | 24 | 12⅛ | 19 | — |
| Guar. ... ... | 42 | 16¾ | 42 | +2½ |
| Deb. ... ... | 60 | 30⅞ | 60 | — |
| L.P.T.B. | | | | |
| 4½% "A" ... | 117⅞ | 112 | 116 | — |
| 5% "A" ... ... | 127¼ | 119¼ | 127 | — |
| 4½% "T.F.A." ... | 111¼ | 106 | 109½ | — |
| 5% "B" ... ... | 122½ | 114 | 123 | — |
| "C" ... ... | 86¾ | 74½ | 83 | –1 |
| MERSEY | | | | |
| Ord. ... ... | 16¼ | 5 | 12 | — |
| 4% Perp. Deb. ... | 83 | 63⅞ | 81½ | — |
| 3% Perp. Deb. ... | 62 | 51 | 60½ | — |
| 3% Perp. Prefce.... | 50⅝ | 27 | 49½ | — |

* ex dividend.

# NOTES AND NEWS

**Speedometers on G.W.R. Locomotives.**—The Great Western Railway has for a long time past been experimenting with different patterns of speedometers. It has recently been decided to fit 100 engines for experimental purposes.

**Austrian Tourist Concessions.**—Visitors to Austria from now until March next may obtain special winter tickets entitling them to travel on the Austrian railways at half the ordinary return fare, as well as to reduced rates on cable railways.

**Renaming of the "Southern Belle."**—We understand that the renaming, as the *Brighton Belle*, of the famous Southern Railway all-Pullman express, the *Southern Belle*, will not take place until the beginning of the summer. We announced this change on page 903 in THE RAILWAY GAZETTE of December 15 last, and editorial comment was made on page 877 of the same issue.

**Acceleration of L.M.S. Newspaper Train.**—The fast newspaper train recently instituted by the L.M.S.R., leaving Euston at 7.30 p.m. on Saturday nights only, for Heysham, has been altered so as to make an additional call at Warrington. The train, which does not convey passengers, is now scheduled to cover the 182 miles from Euston to Warrington in 191 minutes, at an average start-to-stop speed of 57·1 m.p.h.

**Further G.W.R. Restaurant-Car Facilities.**—Restaurant-car facilities were introduced on January 8 on the 9.45 a.m. Bristol to Shrewsbury and the 5.1 p.m. from Shrewsbury to Bristol trains. Reference was made on page 976, in our issue of December 29 last, to the commencement from January 1 of buffet-car facilities on the 9.45 a.m. train from Paddington to Stourbridge Junction and the 4.5 p.m. train from Birmingham to Paddington. Breakfast-car facilities were also introduced on the 8.35 a.m. train from Oxford to Paddington (the 6.40 a.m. from Worcester).

**Italian Contract for Persian Railway Development.**—Italian engineers and workmen have been engaged by the Persian Government to assist in a big scheme of economic development in Persia. The port of Bandar Shapur on the Persian Gulf is to be extended and 400 miles of railway line are to be constructed to connect it with the interior, states a Reuters message from Rome. This railway system will eventually form part of the trunk line between the Persian Gulf and the Caspian Sea. The placing of these important contracts in Italy coincides with the inauguration of a twice-monthly steamship service to connect Trieste with Bandar Shapur. This service has been commenced by the Lloyd Triestino liner *Fenicia*. Earlier developments in the construction of the trans-Persian railway were described in an article on page 531 of THE RAILWAY GAZETTE for October 13 last.

**Longest Through Locomotive Working in Britain.**—With the placing in regular daily service between London and Glasgow of the new L.M.S. Pacific locomotives Nos. 6200, *The Princess Royal*, and 6201 *Princess Elizabeth*, a record has been set up for the longest through locomotive trip in this country. The engines work the Royal Scot throughout between Euston and Glasgow, 401½ miles.

**L.N.E.R. London City Manager's Staff Dinner-Dance.**—Mr. Percy Syder, London City Manager, L.N.E.R., presided at the third annual dinner and dance of his staff, which was held on January 5 at the Abercorn Rooms, Liverpool Street Hotel. During the evening a telegram was despatched to Sir Ralph Wedgwood, Chief General Manager, congratulating him on his recovery from his recent severe illness.

**Collision at Northolt.**—During the fog on Tuesday, the 2.34 p.m. L.N.E.R. train from Marylebone to Ruislip, travelling at low speed, ran into the rear of the 2.35 p.m. G.W.R. Paddington to Oxford train at Northolt junction. Three coaches of the Great Western train were damaged, but fortunately the compartments, which were rather badly smashed, were unoccupied. There were about 50 passengers in the two trains at the time. Six passengers complained of being shaken, but were able to complete their journey.

**Express Stopped for Injured Shunter.**—The G.W.R. express from Cheltenham, due at Paddington at 2.30 p.m., was stopped on Wednesday at Southall to bring to hospital a shunter who had met with an accident at work. First aid was given by the station staff, and the injured man was placed in the guard's van on a stretcher. On arrival at Paddington he was taken to hospital by ambulance for treatment to an ankle, which was believed to be broken. From the time he was picked up to his arrival in hospital he travelled nine miles, and was under treatment in less than 25 minutes.

**An Axlebox Packing and Oil Cleaning and Recovery Plant.**—We have received a communication from John H. Hazley & Son, of Temple Chambers, London, E.C.4, to the effect that the plant described in the article on page 729 of our issue of November 17 last was designed by the Chief Mechanical Engineer's Department of the former London Underground Railways for the Central Lubricating Stores, Ealing Common. The plant is suitable for dealing with any type of wool packing. These railways, which are now part of the London Transport system, were pioneers in oil recovery and the use of wool packings, and John H. Hazley & Son state that they were indebted to the Superintendent of Rolling Stock for information as to the behaviour of different types of wool under working conditions.

**New U.S.S.R. Railways Opened.**—Reuters Trade Service learns from Moscow that the Sverdlovsk-Kurgan railway has been opened for traffic. The line, 367 km. (230 miles) in length, will form a direct outlet from Siberia for transit goods and do much to relieve Chelyabinsk junction. The Western Division has opened the single-track 234-km. (146-mile) line between Viazma and Briansk. This line will be of value for the transport of coal and grain from the south to the north-west, especially to Leningrad.

**The Railway Club.**—At the December meeting of the Railway Club, at 57, Fetter Lane, London, E.C.4, Mr. Edward Wallis spoke on "Signalling, Remote Control." He dealt with multi-control by slotting, the various types of repeaters, fog signalling and d.c. track-circuits, including the testing of bonded wheels. Lack of time forbade but a brief mention of a.c. track-circuits, low-pressure-pneumatic, and electro-pneumatic operation, and colour-light operation. The talk was illustrated by a number of slides and working models.

**Railway Topographical Films.**—Three fine G.W.R. films were shown to an appreciative audience at Film House, 142-150, Wardour Street, W.C., on the afternoon of January 5. They were concerned chiefly with the scenic beauties of Devon, Cornwall, and the Wye Valley and the important part played therein by the railway in the transportation of passengers during the holiday season. The beauties of the Wye Valley lent themselves particularly well to this treatment, but all the subjects were portrayed in such a manner as to provide a strong attraction to the prospective tourist.

**The Lagny Accident.**—M. Joseph Paganon, Minister of Public Works, has urged upon the principal French railway managers that they should at once take in hand a detailed study of plans and regulative measures calculated to ensure greater safety on the railways. He asked that plans should be sent in to him early as he wanted certain measures, particularly in regard to signalling, to be enforced immediately. M. Paganon has also received suggestions from the railwaymen's federation. In addition to a uniform make-up of trains and the use of steel coaches, they urged the adoption of certain safety apparatus. Among these were the Rodolosse system, which automatically applies the brake when a locomotive passes a stop signal, and the Pottier apparatus (described on page 54), which enables the driver to get a clear view of the line instead of looking through a misty glass. Further, they suggested more powerful

rear-lights for trains, preferably electric, so that they might be visible a thousand metres away at least.

**New Spanish Cable Railway.**—A cable railway, 1,444 yds. in length, has recently been constructed from the 162 ft. high Montjuich, near Barcelona, via a 325 ft. intermediate support, to the harbour of San Sebastian, where the terminus is situated on a tower 230 ft. high. Vessels with 200 ft. masts can pass below the suspension cables. The ropeway carries 300 passengers hourly in each direction in four 25-seat cars. Passengers are transported from the ground to the terminus and intermediate station in tandem lifts.

**Railway Conciliation Machinery.**—The joint meetings between representatives of the four group railways and of the three railway trade unions to discuss possible changes in the conciliation machinery for the settlement of disputes were resumed on Tuesday, January 9, when discussions lasted until late in the afternoon. The only announcement forthcoming was that arrangements had been made for a further meeting in 10 days or a fortnight. Suggestions by the companies will, it is understood, be placed before the unions in the meantime.

**London Transport Diary for 1934.**—The activities of the London Passenger Transport Board are strikingly indicated in the handsome diary and calendar called "Appointments for 1934," which was recently issued from 55, Broadway, S.W.1. The diary, bound in scarlet and gold, is interleaved with many beautiful illustrations, all of them bearing on London Transport work, both above and below ground: these including views of such well-remembered events as the omnibus centenary procession in 1929 and the re-opening of the Kingsway tram subway in 1931. Old open types of tube rolling-stock are also illustrated; and there is a particularly pleasing picture of a Green Line coach passing the Charles I statue at Charing Cross. Another interesting feature is the double-page "tree" at the end, which shows at a glance the relationship of the London Transport railways, omnibuses, coaches, tramways, and other undertakings to their predecessors.

**The First Railway Stockholders' Luncheon.**—The British Railway Stockholders' Union Limited assembled in force at a luncheon held at the St. Ermin's Hotel, Westminster, yesterday, with Sir Charles Stuart-Williams in the chair. After proposing the loyal toast, he referred to the great loss they had all sustained in the death of Mr. S. H. Herbert, and paid tribute to his memory. Introducing the principal guest, Sir Ernest Benn, Sir Charles said that no one was more closely associated with initiative and the qualities of progress. Sir Ernest in the course of a brief address divided political interference into three categories, (1) that which aims at redressing some wrong (2) the desire to destroy the industrial system, held by all socialists, and (3) that which is designed to help industry. He then proceeded to prove how costly interference was quoting chapter and verse for the enormous rise in cost of the Government departments claiming to foster commerce. Our natural socialist prejudice against industry has never given it a chance, he said, and, on the other hand, if Government does a thing, individuals cannot compete. He concluded by exhorting his hearers to develop public opinion antagonistic to Government interference. The Chairman proposed a vote of thanks to Sir Ernest, which was seconded by Mr. Ashley Brown and cordially endorsed.

## Railcars and the German State Railway

In a New Year Communiqué Dr. Dorpmüller, the President of the German State Railway Company, announced far-reaching changes to be effected in the services during 1934. Gradually all stopping passenger trains running between large towns are to be replaced by fast railcars running at shorter intervals and with considerably greater speed. Not only on trunk lines is the railcar to become universal, but on branch lines and in the short-distance services the same changes are to be effected.

For the long-distance services, railcars of the Flying Hamburger type, travelling at speeds up to 93-95 m.p.h., are to be used and the necessary alterations and reinforcements of the permanent way are in progress and work on some sections has already been completed. Also distant signals are being moved outwards to give the braking distance necessary with the higher speeds. For branch line and inter-urban traffic railcars with speeds up to 75 m.p.h. are to be used. Before the end of the year 165 new diesel units will be put into operation, bringing the total of such vehicles in service on the Reichsbahn up to nearly 250.

Of the new units in course of construction, 150 are double-bogie and 15 four-wheeled vehicles, designed for branch line and local stopping services. Three express railcars for main-line working are to be built, and two new models of the famous stream-lined Flying Hamburger have been ordered for service betwen Berlin and Leipzig, and Berlin and Cologne.

Experiments are now in progress for increasing to 600 b.h.p. for short periods the 410 b.h.p. developed by the Flying Hamburger engines by a new process of supercharging, and it is anticipated that, if successful, this improvement will be incorporated in the models now on order. Three new stream-lined steam locomotives are also to be put into service, but these will not show a marked increase over present speeds.

## RAILWAY AND OTHER REPORTS

**South Behar Railway.**—The accounts for the year 1933 show that an interim dividend at the rate of 5 per cent. per annum was paid on July 15 last, leaving £5,003 to carry forward. Adding to this £15,000 received from the Secretary of State for India for the half-year to December 31, 1933, and other receipts, less interest on debenture stock, and sundry outgoings, there remains a balance of £14,557 to be dealt with. The directors recommend that a dividend at the rate of 5 per cent. per annum for the half-year be paid to the stockholders on the register on December 14, 1933. This will absorb the sum of £9,489 and leave £5,068 to be carried forward to the current half-year.

**Midland Bank Limited.**—The directors report that, after making an appropriation towards bad and doubtful debts (all of which have been fully provided for), the net profits for the year 1933 amount to £2,266,846, which, with £859,397 brought forward, makes £3,126,243, out of which the following appropriations amounting to £1,404,880 have been made:—To interim dividend, paid July 15, 1933, for the half-year ended June 30, 1933, at the rate of 16 per cent. per annum less income-tax, £854,880; to reserve for future contingencies, £550,000; leaving a sum of £1,721,363 from which the directors recommend a dividend, payable February 1 next, for the half-year ended December 31, 1933, at the rate of 16 per cent. per annum less income tax, £854,880; and a balance to be carried forward of £866,483.

**Glyn, Mills & Co.**—A strong position is shown in the ninety-ninth statement of assets and liabilities of this old and well-established bank as at December 30, 1933. The proportion of quickly realisable assets to the deposits of £36,535,215 is 73·8 per cent., these assets consisting of cash, £6,288,053; balances with other banks and cheques in transit, £1,445,686; money at call and short notice, £7,241,000; bills discounted, £417,732; and investments £11,580,788, including £10,753,736 British Government securities. Bank premises at cost, less amounts written off, stand at £740,000. The total capital authorised and issued is £1,060,000, and the reserve fund stands at £530,000.

# OFFICIAL NOTICES

**The Motherwell Wagon and Rolling Stock Co. Ltd.**

(In Voluntary Liquidation).

FOR IMMEDIATE SALE, large works at Flemington, Motherwell, with direct connection to L.M.S. main line. The works comprise: Wheel Shop (177 ft. x 160 ft.); Forge (121 ft. x 31 ft.); Smith Shop (194 ft. x 44 ft.); Saw-mill (155 ft. x 65 ft.); Wagon Shops (320 ft. x 65 ft. and 240 ft. x 33 ft.) and other smaller buildings; large block of offices. The buildings are equipped with modern hydraulic and electrical plant, turning and machining lathes, drills, &c.; all or part thereof may be taken over as desired. Extent of ground, 23 acres; Ground rent (feuduty), £255 4s. 8d. per annum. Further particulars and cards to view from the undersigned, with whom offers are to be lodged on or before 24th curt.

THOS. ORMISTON, F.C.I.S.,
Liquidator.

6, Brandon Street,
Motherwell.

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WANTED immediately for service on North Borneo State Railways, ASSISTANT PERMANENT WAY ENGINEER, age 25 to 30 years (preferably unmarried), with several years' useful experience in operation and maintenance work at home or abroad after first class education and training.

Apply by letter, with copies of testimonials, to THE SECRETARY, British North Borneo (Chartered) Company, Staple Hall, Stone House Court, Bishopsgate, London, E.C.3.

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THE MADRAS & SOUTHERN MAHRATTA RAILWAY COMPANY LIMITED invite Tenders for:—

176 PAIRS WHEELS AND AXLES FOR CARRIAGES AND WAGONS

(80 pairs Broad Gauge and 96 pairs Metre Gauge).

Tenders are due in on Tuesday, January 30, 1934, by 2.00 p.m.

Tender forms are obtainable at address below, fee one guinea, which will not be returned.

The Directors do not bind themselves to accept the lowest or any tender.

Company's Offices:—

25, Buckingham Palace Road,
Westminster, London, S.W.1.

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**Universal Directory of Railway Officials and Railway Year Book**

**39th Annual Edition, 1933-34.**

**Price 20 - net.**

**THE DIRECTORY PUBLISHING CO. LTD.,**
**33t Tothill Street, London, S.W,1.**

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**Bengal-Nagpur Railway Company Limited**

THE Directors are prepared to receive tenders for:—

1,500 STEEL LAMINATED BEARING SPRINGS.

Specification and form of Tender can be obtained at the Company's Offices, 132, Gresham House, Old Broad Street, London, E.C.2, on or after Wednesday, January 10, 1934.

A fee of 10s. will be charged for each copy of the specification, which is not returnable.

Tenders must be submitted not later than noon on Monday, January 22, 1934.

The Directors do not bind themselves to accept the lowest or any tender, and reserve to themselves the right of reducing or dividing the order.

By Order of the Board,
R. GRANT,
Secretary.

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**OFFICIAL ADVERTISEMENTS**

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Thursday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

# CONTRACTS AND TENDERS

Stephenson Clarke & Associated Cos. Ltd., has placed orders for a total of 500 12-ton wooden-bodied coal wagons as follow:—Cambrian Wagon Co. Ltd., 165; Chas. Roberts & Co. Ltd., 165; and the firm's works at Aberaman, 170.

Charrington, Gardner Locket & Co. Ltd. has placed orders for a total of 450 12-ton coal wagons with the following firms:—Gloucester Railway Carriage & Wagon Co. Ltd., Hurst Nelson & Co. Ltd., Birmingham Railway Carriage & Wagon Co. Ltd. The Butterley Co. Ltd., and the Derbyshire Carriage & Wagon Co. Ltd.

The L.M.S.R. has issued inquiries for tenders for 200 all-steel third-class corridor coaches in addition to the inquiries for 50/100 vestibuled third-class and 20 vestibuled third-brake all-steel coaches referred to in this column in last week's issue of THE RAILWAY GAZETTE.

Guest Keen & Nettlefolds Limited has secured an order from the United Railways of Havana for 16,600 steel fishbolts and nuts.

D. Wickham & Co. Ltd., through W. Bayliss & Co. Ltd., has secured an order from the Central Uruguay Railway for 10 petrol-driven gang trolleys for permanent-way maintenance.

The South African Railways & Harbours Administration is calling for tenders to be presented in South Africa by February 14, for the supply of one petrol engine of approximately 25-h.p. R.A.C. rating, complete with gear box, &c. Alternatively 10 petrol engines similar to above. A number of parts and accessories are also required. Firms desirous of offering engines and accessories of United Kingdom manufacture can obtain the further details from the Department of Overseas Trade.

The Consolidated Brake & Engineering Co. Ltd., Westminster, has received an order for 61 vacuum brake ejectors, type D & M, for the South African Railways.

The B.B. & C.I. Railway Administration has placed orders for locomotive boilers as follow:—

Vulcan Foundry Limited: five D1 class and five J class (with steel fireboxes).

Robt. Stephenson & Co. Ltd.: six T type North British Locomotive Co. Ltd., seven H class, one XC class and one XD class.

The Indian Stores Department has recently placed the following orders:—

Burn & Company, as agents for A. Reyrolle & Co. Ltd.: Transformer and switchgear equipment.

English Electric Co. Ltd.: 20 sets armature coils, traction motors.

International General Electric Co. (India) Ltd.: Three 2 ft. 6 in.-gauge electric mining and shunting locomotives.

W. G. Bagnall Limited has received an order for two metre-gauge 0-8-0 type tank locomotives with cylinders 14½ in. by 20 in. and 3 ft. 3 in. wheels, for the Bhavnagar State Railway, through the consulting engineers, Messrs. Robert White & Partners.

W. Billinton & Co. has received an order from the East Indian Railway, Calcutta, for 12 locomotive boilers for conversion to superheater of 4-6-0 Pc 1 class locomotives.

The Bengal-Nagpur Railway invites tenders, receivable at 132, Gresham House, Old Broad Street, E.C.2, by January 22, for 1,500 steel laminated bearing springs.

The Bombay, Baroda & Central India Railway invites tenders, receivable by the Secretary at The White Mansion, 91, Petty France, London, S.W.1, by January 26, for wheels and axles for carriages.

The Chief Controller of Stores, Indian Stores Department (Engineering Section), New Delhi, invites tenders, receivable by January 31, for a two-operator motor-driven direct-current portable arc welding set to I.S.D. standard specification No. P.I. 116-A.

## Forthcoming Events

Jan. 12 (*Fri.*).—Institute of Transport (Newcastle), at Royal Station Hotel, 7.30 p.m. "Future Developments in Air Transport," by Mr. W. L. Runciman.

Institute of Transport (Leeds), at Town Hall, 6.30 p.m. "Industrial Transport," by Mr. F. Smith.

Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, 7 p.m. "Rubber and its Engineering Uses," by Mr. B. D. Porritt.

Railway Club, 57, Fetter Lane, London, E.C.4, 7.30 p.m. "Why the L. & N.W.R. was the Premier Line," by Mr. J. D. Goffey.

Railway Students' Association (Edinburgh), at Goold Hall, St. Andrew Square, 7.30 p.m. "The Organisation of Labour Operations at Docks," by Mr. C. M. Jenkin Jones.

Retired Railway Officers' Society, in Essex Room, Liverpool Street Hotel, London, E.C.2, 3 p.m. Ladies' Tea.

Jan. 13 (*Sat.*).—L.N.E.R. (Great Central) Lecture and Debating Society, at University College, Shakespeare Street, Nottingham, 5 p.m. "The Railway Research Service and its Function," by Mr. C. E. R. Sherrington.

Jan. 15 (*Mon.*).—Permanent Way Institution (Brighton), at Redhill, 7 p.m. Special Meeting.

Jan. 15–27.—Hobbies and Models Exhibition, at City Hall, Deansgate, Manchester.

Jan. 16 (*Tues.*).—L.N.E.R. (Middlesbrough) Lecture and Debating Society, at Cleveland Scientific and Technical Inst., Corporation Road, 7.15 p.m. "Coaching Rolling Stock Problems," by Mr. C. F. Ibbotson.

Jan. 17 (*Wed.*).—Institution of Railway Signal Engineers, at Inst. of Electrical Engineers, Savoy Place, London, W.C.2, 6 p.m.

# Railway Share Market

The stock and share markets have been buoyant and Home Railway stocks have participated in the strong tendency. Current traffic receipts are regarded favourably and whilst the impending declaration of dividends is not expected to exercise any direct influence on quotations it is considered that the annual accounts will show a further progress in net revenue compared with 1932. This advance has already been indicated partly by the interim statements of last July. Great Western ordinary stock was the outstanding feature in markets this week, a demand arising which caught the Stock Exchange jobbers short of stock and there was a sharp advance in the quotation. The market is anticipating that the final dividend will raise the total for the year to 3 per cent. and thus keep the company's issues within the trustee list although it is estimated that a further transfer from reserves will be necessary.

London Midland & Scottish ordinary stock and two of the preference stocks, viz. the 4 per cent. first preference and the 1923 preference stock were in good request and the three stocks reached additional high prices. London & North Eastern stocks were again in demand on the encouraging reports received from the iron and steel centres and Southern preferred ordinary stock responded to the hopeful views regarding payment of the full 5 per cent. dividend for the current year. London Transport "C" stock returned to favour after a period of quietness. In the foreign railway market there was a good rise in Nitrate Railways shares and Antofagasta consolidated stock on the passing of the Chilean Nitrate law. Argentine railway stocks were steadier than of late but there was no outstanding movement. The largest fall in quotations was in the Buenos Ayres Central first and second mortgage debentures which dropped four and two points respectively, but the only business recorded was one transaction in the first-named stock at 16. In other directions there was a marking down of Philippine first mortgage bonds by ten points but the market in these bonds is very nominal. All Colonial stocks responded to encouraging advices regarding an improvement in the business outlook in the Dominion.

The upward movement started with some strong buying of the prior lien stocks, nearly every Canadian railway stock of a fixed dividend character being advanced in price. This embraced especially the debentures of the Canadian Pacific and the guaranteed stock and was followed by a big speculative buying movement in the common shares and the 4 per cent. non-cumulative preference. Among other issues in the Colonial section Rhodesia and Mashonaland debentures made a further advance.

## Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

| | Railways. | Miles open 1933–34. | Week Ending | Traffics for Week. Total this year | Traffics for Week. Inc. or Dec. compared with 1933 | No. of Week. | Aggregate Traffics to Date. Totals. This Year. | Aggregate Traffics to Date. Totals. Last Year. | Aggregate Traffics to Date. Increase or Decrease. | Shares or Stock. | Prices. Highest 1933. | Prices. Lowest 1933. | Prices. Jan. 10, 1934. | Yield % (See Note.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | £ | £ | | £ | £ | £ | | | | | |
| South & Central America. | Antofagasta (Chili) & Bolivia | 830 | 7.1.34 | 9.270 | + 1,910 | 1 | 9.270 | 7.540 | + 1,730 | Ord. Stk. | 26 | 11 3/4 | 22 | Nil |
| | Argentine North Eastern.. | 753 | 6.1.34 | 8.900 | + 300 | 27 | 277,100 | 315 000 | – 37,900 | ,, | 14 1/2 | 5 | 10 | Nil |
| | Argentine Transandine .. | 111 | 6.1.34 | 2,100 | + 1,030 | 27 | 29,410 | 4.230 | + 25,180 | A. Deb. | 55 | 40 | 50 | 8 |
| | Bolivar .. .. .. | 170 | Dec., 1933 | 5,350 | – 1.250 | 52 | 72,700 | 89,350 | – 16,650 | 6 p.c. Db. | 10 | 5 | 10 | Nil |
| | Brazil .. .. .. | — | — | — | — | — | — | — | — | Bonds. | 15 | 11 | 11 1/2 | 45/16 |
| | Buenos Ayres & Pacific .. | 2,806 | 6.1.34 | 105.000 | – 7,000 | 27 | 2,521,000 | 2.688.000 | – 167,000 | Ord. Stk. | 26 | 97/16 | 15 | Nil |
| | Buenos Ayres Central .. | 190 | 31.12.33 | 8,162 | – 935 | 27 | 273,540 | 253.307 | + 20.233 | Mt. Db. | 30 | 10 | 18 1/2 | Nil |
| | Buenos Ayres Gt. Southern | 5,075 | 6.1.34 | 220,000 | – 31,000 | 27 | 4,850,000 | 4,685,000 | + 165,000 | Ord. Stk. | 44 1/2 | 21 1/2 | 32 | Nil |
| | Buenos Ayres Western .. | 1,926 | 6.1.34 | 67.000 | – 8,000 | 27 | 1,636,000 | 1,700 .000 | – 64,000 | ,, | 34 1/2 | 15 3/4 | 24 | Nil |
| | Central Argentine .. | 3,700 | 6.1.34 | 174,000 | – 1,000 | 27 | 4.222.000 | 5,019,000 | – 797,000 | ,, | 28 1/2 | 15 | 19 | Nil |
| | Do. .. .. | — | — | — | — | — | — | — | — | Dfd. | 18 | 10 | 12 1/2 | Nil |
| | Cent. Uruguay of M. Video | 273 | 6.1.34 | 15,335 | – 1,283 | 27 | 435.291 | 416,423 | + 18,868 | Ord. Stk. | 20 | 8 | 11 1/2 | Nil |
| | Do. Eastern Extn. | 311 | 6.1.34 | 3,099 | – 1,391 | 27 | 83,276 | 87,398 | – 4,122 | — | — | — | — | — |
| | Do. Northern Extn. | 185 | 6.1.34 | 1.576 | – 543 | 27 | 46,656 | 50.830 | – 4,174 | — | — | — | — | — |
| | Do. Western Extn. | 211 | 6.1.34 | 1,638 | + 422 | 27 | 39,753 | 38,408 | + 1,345 | — | — | — | — | — |
| | Cordoba Central .. .. | 1,218 | 6.1.34 | 37,000 | + 1,000 | 27 | 1,175,000 | 1,188,000 | – 13.000 | Ord. Inc. | 9 1/4 | 2 1/2 | 6 | Nil |
| | Costa Rica .. .. .. | 188 | Sept., 1933 | 18 332 | – 944 | 13 | 64,775 | 67,775 | – 3,000 | Stk. | 29 | 20 | 24 1/2 | 8 5/16 |
| | Dorada .. .. .. | 70 | Nov., 1933 | 7,400 | – 100 | 47 | 85.800 | 75,200 | + 10,600 | 1 Mt. Db. | 76 1/2 | 68 3/4 | 80§ | 7 1/2 |
| | Entre Rios .. .. | 810 | 6.1.34 | 21,100 | + 6,600 | 27 | 418,600 | 441.700 | – 23,100 | Ord. Stk. | 26 1/2 | 9 | 16 1/2 | Nil |
| | Great Western of Brazil .. | 1.072 | 6.1.34 | 9,000 | – 6,300 | 1 | 8,400 | 15,300 | – 6.900 | Ord. Sh. | 23/6 | 1/2 | 5/4 | Nil |
| | International of Cl. Amer. | 794 | Nov., 1933 | 347 691 | – 91 368 | 47 | 4.125,768 | 4.581,088 | – 455 320 | — | — | — | — | — |
| | Interoceanic of Mexico .. | — | — | — | — | — | — | — | — | 1st Pref. | 1/2 | 1/16 | 1/2 | Nil |
| | La Guaira & Caracas .. | 22 3/4 | Dec., 1933 | 3.400 | – 4,280 | 52 | 55,670 | 87,795 | – 32,125 | Stk. | 16 | 10 | 12 1/2 | Nil |
| | Leopoldina .. .. .. | 1,918 | 6.1.34 | 15,336 | – 8,908 | 1 | 13.145 | 20,781 | – 7,636 | Ord. Stk. | 20 1/4 | 10 | 12 1/2 | Nil |
| | Mexican .. .. .. | 483 | 31.12.33 | $306,300 | + $26,800 | 26 | $4,975,900 | $4,274,200 | + $701,700 | ,, | 3 | 1/2 | 2 1/2 | Nil |
| | Midland of Uruguay .. | 319 | Dec., 1933 | 11,542 | + 2,105 | 26 | 57,230 | 52,204 | + 5.026 | Ord. Stk. | 2 | 1 | 2 | Nil |
| | Nitrate .. .. .. | 407 | 31.12.33 | 11,888 | + 9,053 | 52 | 147,158 | 44 603 | + 102,555 | Ord. Sh. | 78 6 | 11/16 | 3 1/4 | Nil |
| | Paraguay Central .. .. | 274 | 6.1.34 | 3,060 | + 20 | 27 | 88,620 | 77,000 | + 11,620 | Pr. Li. Stk. | 72 | 49 1/2 | 67§ | 8 15/16 |
| | Peruvian Corporation .. | 1,059 | Dec., 1933 | 54 751 | + 7,517 | 26 | 329,691 | 345.773 | – 16,082 | Pref. | 15 1/4 | 5 | 10 | Nil |
| | Salvador .. .. .. | 100 | 30.12.33 | 1.274 | – 2,738 | 27 | 25.026 | 49.655 | – 24,629 | Pr. Li. Db. | 70 | 66 1/2 | 70 | 7 1/8 |
| | San Paulo .. .. .. | 153 1/2 | 31.12.33 | 30,225 | – 8,477 | 52 | 1,566,650 | 1,497,874 | + 68,776 | Ord. Stk. | 102 | 68 | 83 1/2 | 2 5/8 |
| | Taltal .. .. .. | 164 | Dec., 1933 | 8.915 | + 7,855 | 26 | 31,065 | 8,115 | + 22,950 | Ord. Sh. | 1 3/4 | 5/4 | 1 1/2 | 6 11/16 |
| | United of Havana.. .. | 1,367 | 6.1.34 | 14,376 | – 536 | 27 | 355,304 | 388,177 | – 32 873 | Ord. Stk. | 8 | 2 | 4 1/2 | Nil |
| | Uruguay Northern .. | 73 | Dec., 1933 | 1,298 | – 706 | 26 | 7,383 | 9,915 | – 2.532 | Deb. Stk. | 6 | 3 1/2 | 5 | Nil |
| Canada. | Canadian National .. | 23,758 | 21.12.33 | 563,450 | + 21,381 | 50 | 28,959,701 | 31,509,083 | – 2,549,382 | — | — | — | — | — |
| | Canadian Northern .. | — | — | — | — | — | — | — | —4 p.c. | Perp. Dbs. | 60 1/2 | 38 | 57 1/2 | 6 15/16 |
| | Grand Trunk .. .. | — | — | — | — | — | — | — | — | 4 p.c. Gar. | 99 3/4 | 85 | 99 1/2 | 4 |
| | Canadian Pacific .. .. | 17,024 | 31.12.33 | 584 200 | + 29,000 | 52 | 22,854,000 | 24,787,400 | – 1,933,400 | Ord. Stk. | 22 1/8 | 11 | 15 | Nil |
| India.† | Assam Bengal .. .. | 1,329 | 9.12.33 | 22.853 | – 2,995 | 36 | 841,938 | 865,268 | – 23,330 | Ord. Stk. | 79 | 70 | 72 1/2 | 4 1/8 |
| | Barsi Light.. .. .. | 202 | 16.12.33 | 2.610 | + 15 | 37 | 108.667 | 96,142 | + 12,525 | Ord. Sh. | 101 3/4 | 70 | 98 1/2 | 6 1/16 |
| | Bengal & North Western.. | 2,113 | 16.12.33 | 50,520 | + 3,724 | 11 | 502,886 | 474,966 | + 27,920 | Ord. Stk. | 292 | 240 | 292 | 5 1/2 |
| | Bengal Dooars & Extension | 161 | 16.12.33 | 2.718 | + 1 | 37 | 111,100 | 113.514 | – 2 414 | ,, | 127 | 119 | 125 | 5 5/8 |
| | Bengal-Nagpur .. .. | 3,269 | 9.12.33 | 110,625 | + 9,380 | 36 | 3,623,484 | 3,446,618 | + 176,866 | ,, | 97 1/4 | 83 1/2 | 96 1/2 | 4 1/8 |
| | Bombay, Baroda & C. India | 3.089 | 30.12.33 | 158,550 | – 1.650 | 39 | 5.645,025 | 5,516,625 | + 128.400 | ,, | 112 | 107 | 110 1/2 | 5 7/16 |
| | Madras & South'n Mahratta | 3.230 | 16 12.33 | 104,925 | – 10,044 | 37 | 3,989,907 | 3.786.339 | + 203.568 | ,, | 127 | 114 1/4 | 122 1/2 | 7 5/16 |
| | Rohilkund & Kumaon .. | 546 | 16.12.33 | 9,409 | + 958 | 11 | 88,174 | 80,813 | + 7,361 | ,, | 260 | 225 | 260 | 5 3/4 |
| | South India .. .. | 2,526 | 16 12.33 | 69,941 | – 7,609 | 37 | 2,917,659 | 2,960,820 | – 43 161 | ,, | 119 1/2 | 112 | 116 1/2 | 6 7/8 |
| Various. | Beira-Umtali .. .. | 204 | Oct., 1933 | 49 929 | + 7,388 | 4 | 49,929 | 42,541 | + 7.388 | — | — | — | — | — |
| | Bilbao River & Cantabrian | 15 | Dec., 1933 | 988 | + 48 | 52 | 18,980 | 21,553 | – 2.573 | — | — | — | — | — |
| | Egyptian Delta .. .. | 621 | 20.12.33 | 9,304 | + 17 | 38 | 168,241 | 187,172 | – 18,931 | Prf. Sh. | 1 31/32 | 1 3/4 | 2 | Nil |
| | Great Southern of Spain .. | 104 | 30.12.33 | 2.169 | + 242 | 52 | 116,382 | 113,194 | + 3,188 | Inc. Deb. | 4 | 3 | 5 1/2 | Nil |
| | Kenya & Uganda .. .. | 1,625 | Aug., 1933 | 159,746 | + 12,456 | 35 | 1,523,550 | 1,273,216 | + 250,334 | — | — | — | — | — |
| | Manila .. .. .. | — | — | — | — | — | — | — | — | B. Deb. | 53 | 33 1/2 | 36 1/2 | 9 9/16 |
| | Mashonaland .. .. | 913 | Oct., 1933 | 94,573 | + 32,573 | 4 | 94.573 | 62,000 | + 32.573 | 1 Mg. Db. | 91 3/4 | 42 | 93 1/2 | 5 5/16 |
| | Midland of W. Australia .. | 277 | Nov., 1933 | 12 568 | – 412 | 21 | 65,111 | 61,532 | + 3,579 | Inc. Deb. | 89 | 70 | 89 1/2 | 4 1/2 |
| | Nigerian .. .. .. | 1,903 | 25.11.33 | 56,402 | – 15,318 | 35 | 899.753 | 976 583 | – 76,830 | — | — | — | — | — |
| | Rhodesia .. .. .. | 1,538 | Oct., 1933 | 160,562 | + 52,214 | 4 | 160.562 | 108.348 | + 52 214 | 4 p.c. Db. | 98 1/2 | 80 3/4 | 98 | 4 1/16 |
| | South African .. .. | 13,151 | 16.12.33 | 521,254 | + 84,106 | 38 | 16.784,729 | 14,473,560 | +2,311,169 | — | — | — | — | — |
| | Victorian .. .. .. | 6,172 | Oct., 1933 | 762 659 | – 44,068 | 17 | 2,797,539 | 2,885.003 | – 87 464 | — | — | — | — | — |
| | Zafra & Huelva .. .. | 112 | Nov., 1933 | 10,926 | + 149 | 47 | 123,826 | 120,955 | + 2,871 | — | — | — | — | — |

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16.

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. ‡ Average rate of exchange for the week:—This year 326 1/64. Last year 423/16